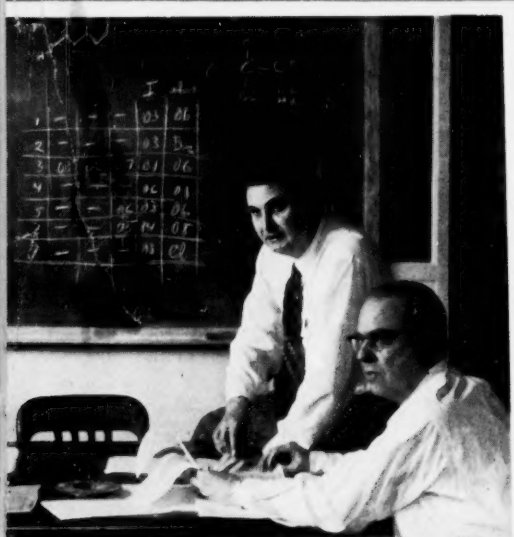


Chemical Week

January 19, 1957

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End of government control of GAF?
Here's what you can expect from private ownership p. 20

◀ **Patent Office's Andrews, Lanham:**
Machine searching is their cure for a logjam of applications . . . p. 52

Safety labeling on a global scale
is coming; UN and ILO squabble over how to do it p. 44

◀ **Upgraded chemical junk**—There's profit in products gleaned from other people's wastes p. 66

Titanium is headed for its biggest year: '57 sponge production will be double that of '56 p. 80

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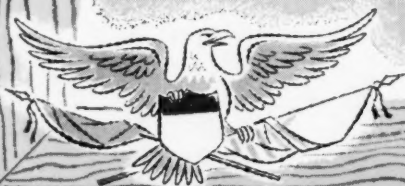
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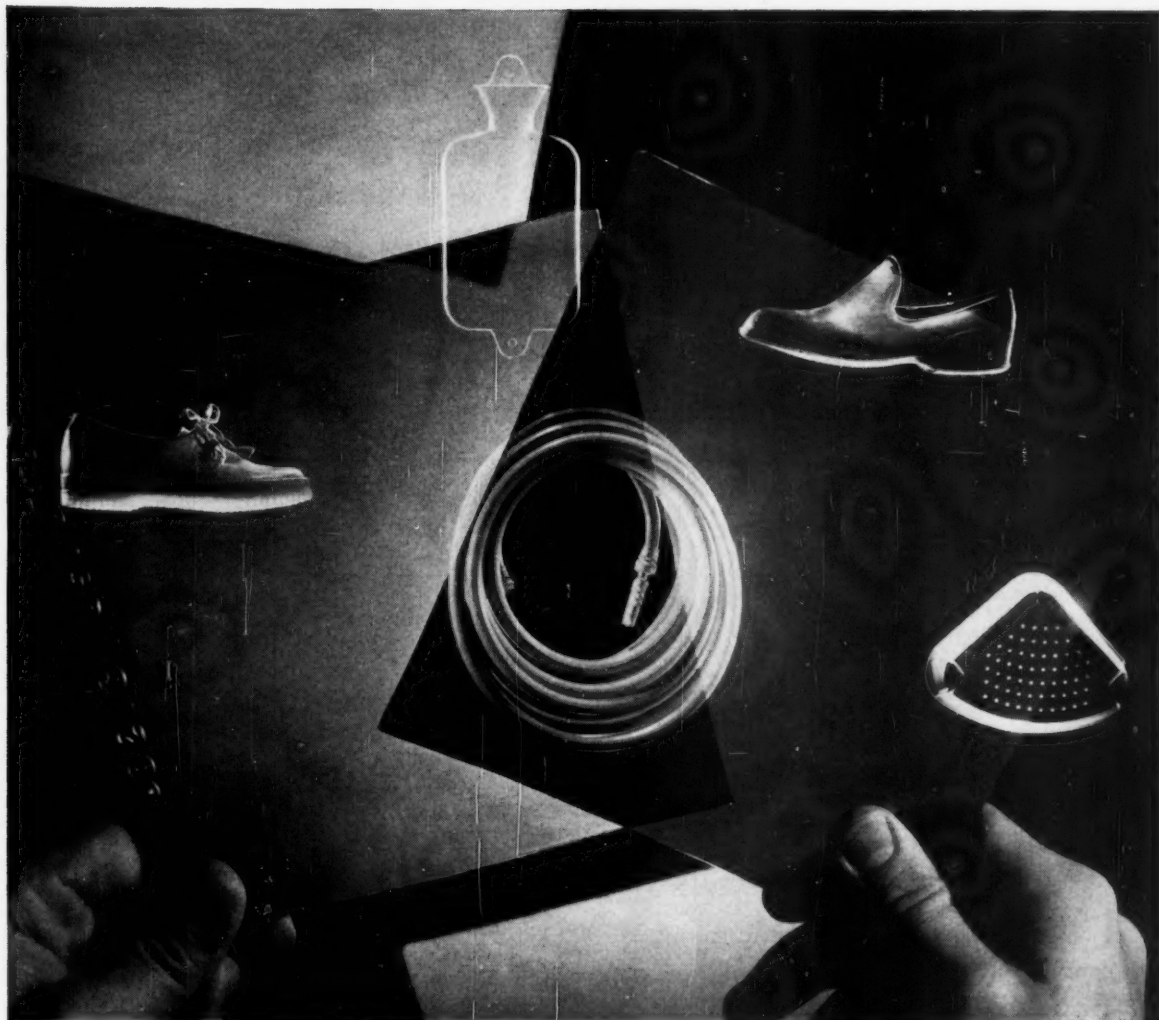
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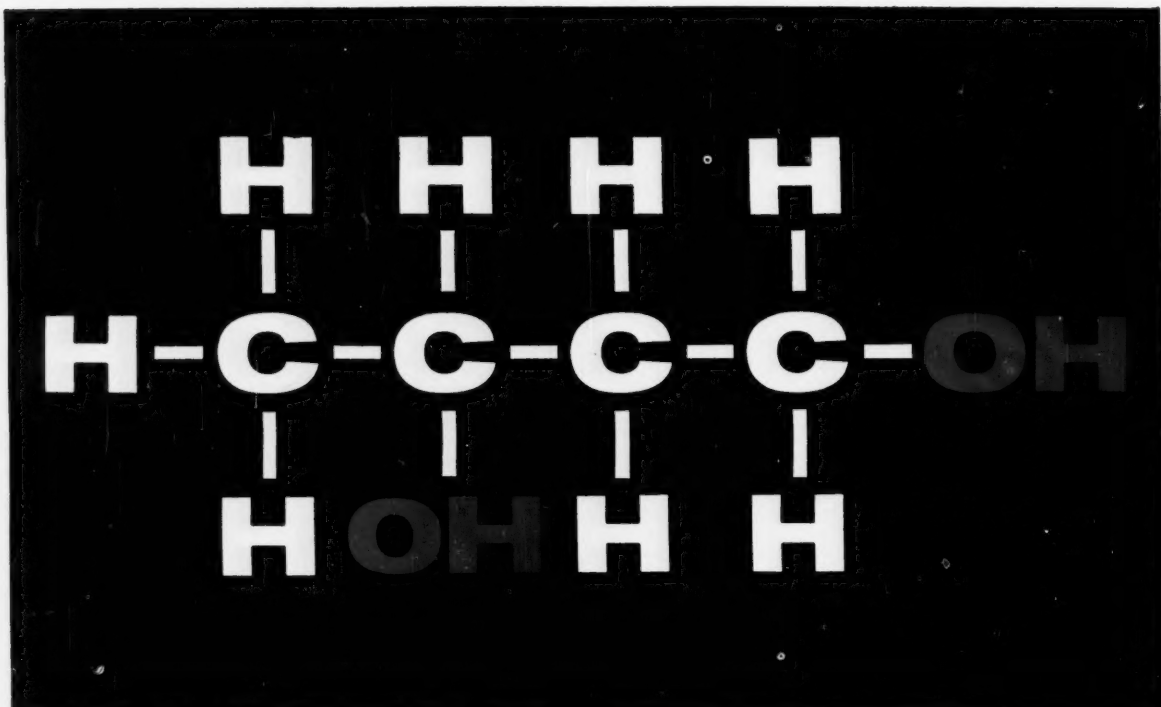


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Chemical Week

TOP OF THE WEEK

January 19, 1957

Those atomic safety hearings last week presaged a new era in government supervision of a private-enterprise atomic industryp. 22

More chemical companies are using personnel tests, but extent of their use varies widelyp. 30

New aluminum foil multiwall bags bid fair to garner more of the market. Reasons: newer designs, competitive pricesp. 40

Bad publicity for carbon tetrachloride worries makers of spot removers. Here's what they're doing about the scare storiesp. 90

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90 SPECIALTIES

A 20-year-old product became a best seller overnight, as Adell switched to use of spot television advertising

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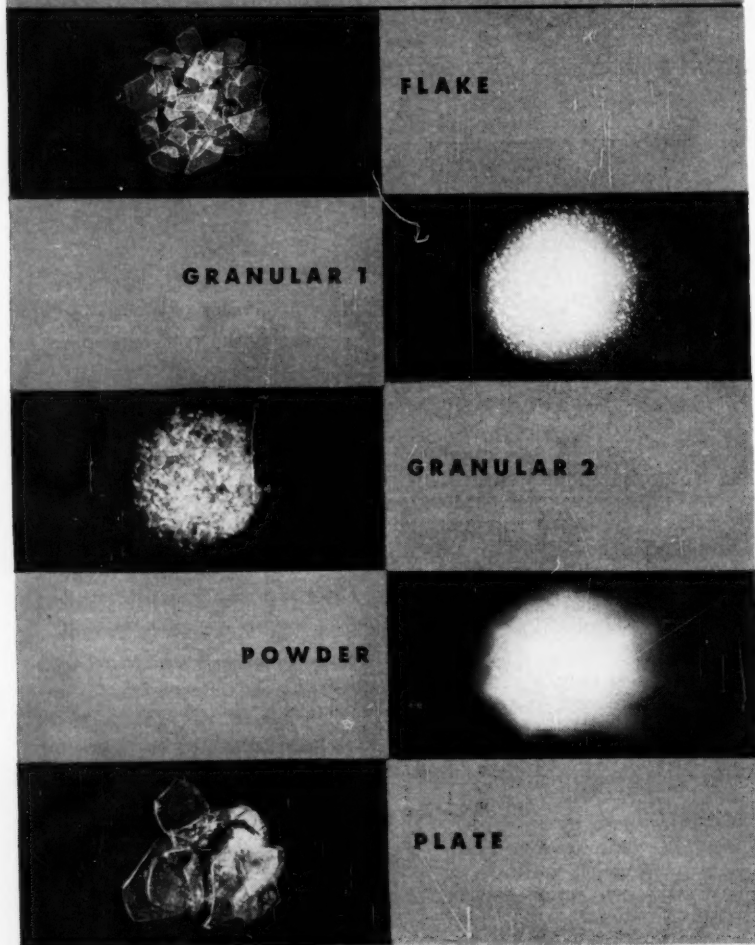
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Chemical Week

January 19, 1957

Vol. 80, No. 3

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Subscriptions to Chemical Week are solicited from management men in the chemical process industries. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscription Service, 330 W. 42nd St., New York 36, N. Y., or 1309 Noble St., Philadelphia 25, Pa. Allow one month for change of address.

Single copies 35¢. Subscription rates—United States, United States Possessions and Canada, \$3.00 a year; \$4.00 for two years; \$5.00 for three years. Other Western Hemisphere countries, \$15.00 a year; \$25.00 for two years; \$30.00 for three years. All other countries, \$25.00 a year; \$40.00 for two years; \$50.00 for three years. Second-class mail privileges authorized at Philadelphia, Pa. © Copyright 1957 by McGraw-Hill Publishing Co., Inc. All rights reserved.



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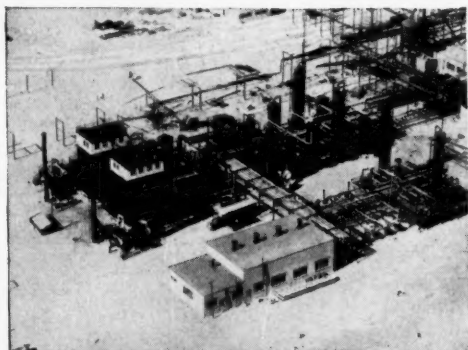
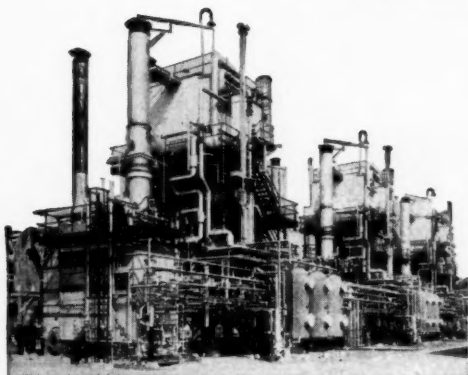
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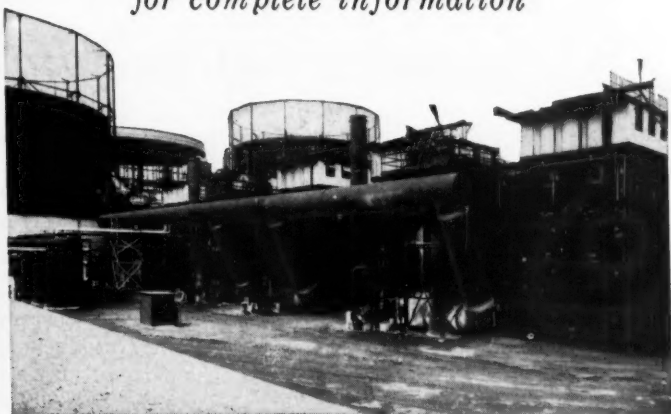


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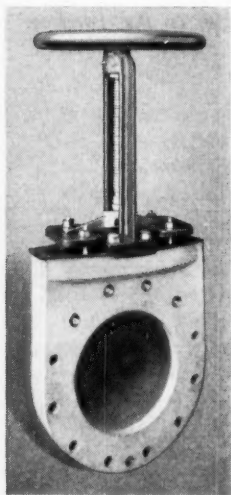
present Atlas products, including sorbitol, emulsifiers, detergents, polyester resins, activated carbons, and explosives.

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chem-memos



Corrosion-resistant Thermaflow materials used in the body of this valve withstand paper mill acids and alkalis.

Thermaflow reinforced molding compounds give designers advantages over metals

Reinforced polyester molding compounds—a new kind of plastic material—are arousing a lot of interest among product designers. These materials offer wide opportunities for redesigning parts formerly made of metal. Assemblies of numerous metal parts, for example, can be made into a single plastic piece. You can save weight without sacrifice of strength. Or, you can make large pieces by automatic molding, instead of costly hand techniques. You can readily produce complex shapes with deep draw and intricate detail. And you can get qualities of corrosion resistance, impact strength and electrical insulation beyond the range of most other materials.

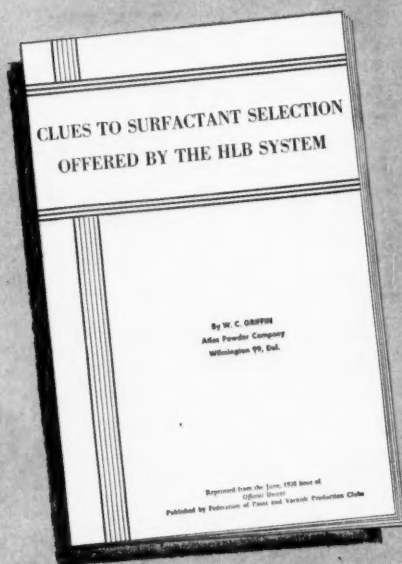
To make this new family of materials avail-

able for a wider range of uses, Thermaflow Chemical Corporation and Atlas have joined forces. This move brings together the plastics experience of Thermaflow, leading supplier of reinforced molding compounds, and the broad research facilities of Atlas, leading developer of special organic chemicals.

Designers and molders can look forward to even better service on present types of Thermaflow glass fiber reinforced and nylon rag reinforced compounds. And they can look forward to new and improved materials which will offer interesting ways to obtain superior product performance, simplification of design, and economy.

Write to us for a copy of the Thermaflow literature file.

New data on time-saving HLB system for choosing surfactants



New "do-it-yourself" dope on the Atlas-developed HLB System for choosing surfactants helps you to apply this time-saving technique to many kinds of non-ionic surfactants—including types made by companies other than Atlas. Using this information, you can calculate the HLB number of just about any non-ionic, so that you can extend this system to other surfactants that you use.

This data is summed up in an article by W. C. Griffin of the Atlas Product Development Department. It explains how you can estimate HLB by cloud point and dispersibility. It outlines procedures you can use in your own lab to figure values and to match surfactants to individual applications.

With the HLB numbers you calculate this way, you can narrow down your choice of surfactants from the hundreds on the market to the relatively few that have values corresponding to the "required HLB" of the application in which you're interested.

For a copy of the article, write for "CLUSURF"—our code name for "Clues to Surfactant Selection by the HLB System."

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OPINION

For Christmas Gifts

TO THE EDITOR: I was interested in your article, "No Relish for the Role" (Dec. 15, p. 108).

To me, Christmas is a time of good will and showing appreciation for past favors. I do not consider it "my duty" to give customers a gift. Nevertheless, I do try to show my appreciation in some small way, not as a bribe as some people think of it, but rather as a token of thanks.

It seems odd in these times of fabulous profits and high business volume that the companies who are making the most are the very ones also griping the most about Christmas giving. Of all the companies that we buy from, the ones with whom we do the largest volume are the ones that show their appreciation the least. This applies especially to chemical companies, many of which enjoy monopolies in their territories.

If wise planning is made before too late in the season, there is no reason why Christmas gifts should amount to more than a small fraction of the total sales cost for each customer per year. Also, the gift should have some useful value; if you can't think of something for your customer, send his wife a box of candy or his child a toy. Also, don't bring it to the office—send it to his home by mail.

NAME WITHHELD

P. S. Please do not use my name. It is a big bone of contention that my own company does not give Christmas gifts to customers. But I believe that some day we will. Competition is bound to get more keen soon.

Gift Problem Solved

TO THE EDITOR: We noted your feature article in the Dec. 15 issue relative to the problem of Christmas business-gift-giving. We believe we have found a way to handle this situation and make a merrier Christmas for everybody. "Christmas is for the children" may be a trite phrase, but we believe it is true; and we couldn't think of a better way to get the Christmas spirit for our customers and ourselves than to give to needy children.

We hope that other manufacturers

of chemical processing equipment . . . and industry in general may be inclined to consider this approach to what you so rightly describe as a difficult situation.

E. J. MEIER
Director, Public Relations
Standard Steel Corp.
Los Angeles

Immediately below is the letter Standard Steel sends to its business friends.—ED.

"Place the enclosed card under your Christmas tree this year!

"It is a merry Christmas to you from the children of the Los Angeles Orphans' Home and Standard Steel Corporation.

"Let this be your Christmas present from Standard Steel Corporation. Instead of distributing gifts to our valued friends and customers, we have made a sizeable donation to the Los Angeles Orphans' Home.

"We are confident that you will share our happiness in knowing that you have contributed to this wonderful cause. Christmas is most beautiful when it is for children!

"With our best wishes for a Merry Merry Christmas and a most Happy New Year."

Add American Potash

TO THE EDITOR: We have read with a great deal of interest your recent comprehensive articles on the pesticides and agricultural chemicals industry.

We were somewhat chagrined in the first section . . . to find you omitted American Potash & Chemical Corp. as a basic producer of both tetraethyl pyrophosphate (TEPP), of which, I believe, we were the first

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
H. C. E. Johnson, Chemical
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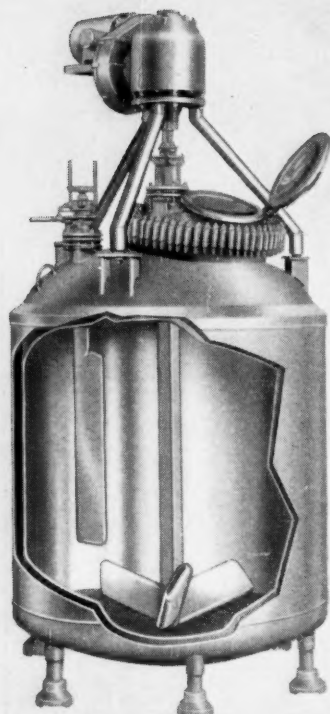
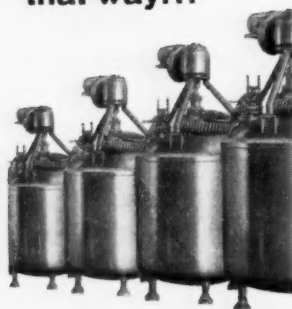


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OPINION

domestic producer, and also para-
thion, our trademarks for these prod-
ucts being Tetron and Alkron, re-
spectively.

We are also basic producers of the
soil and space fumigants, bromine,
ethylene dibromide and methyl brom-
ide. Our soil fumigant (ethylene di-
bromide) is sold under the tradename
Bromofume.

We were further surprised to read
your continuation of this excellent
summary in your Nov. 17 issue and
find that we again had been omitted
as a basic producer of borax and so-
dium chlorate. . . .

WILLIAM J. F. FRANCIS

Vice-President

American Potash & Chemical Corp.

Los Angeles

Borax for Wood

TO THE EDITOR: Referring to your
news item on wood preservation in
Australia (*CW*, Nov. 17, p. 166), I
would like to add that diffusion im-
pregnation of timber with borax and
boric acid solutions has been a well-
established process for quite some
years in Australia and New Zealand.
Boron compounds diffuse easily on
account of small ion size and are
toxic to all the major wood-destroy-
ing insects and fungi. A recent ac-
count is given in "Diffusion Impregna-
tion of Building Timbers with Boron
Compounds," published in November,
1955, by New Zealand Government
Scientist Harrow.

D. MONTGOMERY

Agricultural Sales Department

Borax Consolidated Ltd.

London, England

Simazin, Chlorozin

TO THE EDITOR: We refer to the re-
view of agricultural pesticides . . .

On pages 96 and 97, there appear
notes on our experimental herbicide,
Simazin. The designation CDT does
not refer to Simazin, but to Chlorozin,
a related compound. The designation
CET has been used for Simazin; how-
ever, we would prefer not to have this
nomenclature get into the literature
since the name Simazin appeared early
and probably will be accepted as a
common name. This will eliminate the
difficulty of having several names ap-
pear in the literature. The melting

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Emersol 132 Lily, long the leader in the triple-pressed stearic acid field, is now made to even higher standards of quality. Its new iodine value of less than 0.5 is the lowest yet offered in commercial crystalline stearic acid. This ensures a longer shelf life for your products, with a maximum retention of freshness, color, and consistency. The unsurpassed light color and color stability of Emersol 132 Lily, coupled with its controlled crystallinity, assure consistent performance during use

and result in lighter colored, higher quality end-products. This extra sales appeal for your products can be yours without added cost, since Emersol 132 Lily costs no more than other triple-pressed stearic acids. So, because your products deserve the best, the next time you order stearic acid, specify Emersol 132 Lily.

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Dept. 11-A, Carew Tower
Cincinnati 2, Ohio

Please send 24-page Emeryfacts titled "Emersol Stearic Acids."

Name.....Title.....

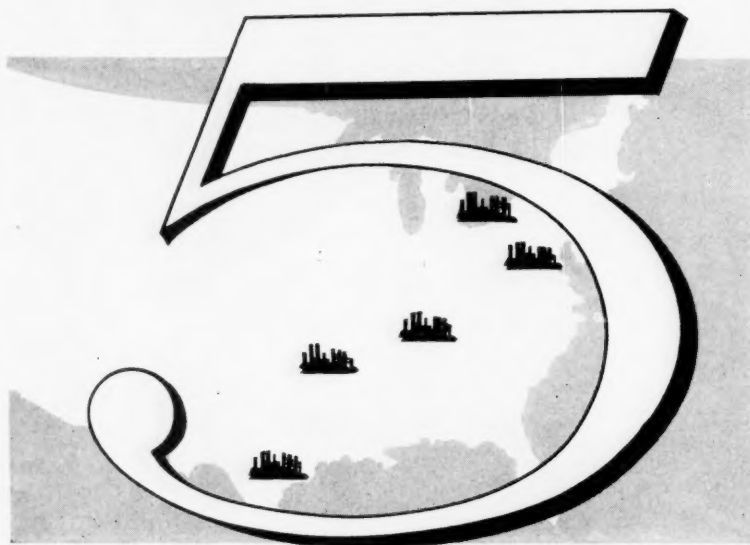
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Painesville, Ohio — Pine Bluff, Ark.

SALES OFFICES: Cleveland, Cincinnati, Chicago, Houston, Memphis, New York,
Philadelphia, Pittsburgh, St. Louis

OPINION

point for Simazin should be 225-227 C rather than 104 as listed.

We would also like to call your attention to the listing of companies producing pesticides on page 72. The pesticides are produced in our company by the Geigy Agricultural Chemicals, Division of Geigy Chemical Corp., rather than by the Geigy Industrial Chemicals.

We feel that this article by Dr. Fischer was an excellent one . . .

C. C. ALEXANDER
Geigy Agricultural Chemicals
Ardsley, N.Y.

MEETINGS

Association for Applied Solar Energy, solar furnace symposium, Hotel Westward Ho, Phoenix, Arizona, Jan. 20-22.

Stanford Research Institute, industrial economics conference, Theme: "Implementing long-range company planning," Fairmont Hotel, San Francisco, Jan. 21-22.

Compressed Gas Association, Inc., 44th annual meeting, Waldorf-Astoria, New York, Jan. 21-23.

Association of American Soap and Glycerine Producers, annual convention, Waldorf-Astoria Hotel, New York, Jan. 23-25.

Texas A & M College, 12th annual symposium on instrumentation for the process industries, College Station, Texas, Jan. 23-25.

Chemical Buyers' Group—National Assn. of Purchasing Agents, midwinter meetings, Western division, Congress Hotel, Chicago, Jan. 24; Eastern meeting, Hotel Commodore, New York, Jan. 29.

Industrial Security Institute, and Kana-wha Valley Industrial Emergency Planning Council, first seminar on industrial mutual aid organization, Charleston, W. Va., Jan. 30-31.

American Society for Testing Materials, annual meeting, Benjamin Franklin Hotel, Philadelphia, Feb. 4-8.

American Pharmaceutical Manufacturers' Association, Central section meeting, Edgewater Beach Hotel, Chicago, Feb. 11-13; Western section meeting, Ambassador Hotel, Los Angeles, Feb. 18-19.

Technical Association of the Pulp and Paper Industry, 42nd annual meeting, Hotel Commodore, New York, Feb. 18-21.

National Agricultural Chemicals Assn., spring meeting, Fairmont Hotel, San Francisco, March 6-8.

Federal Wholesale Druggists' Assn., midyear meeting, Statler Hotel, New York, March 7-9.

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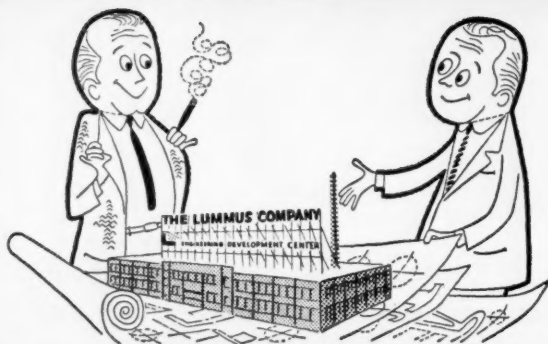
Or a product idea that needs a process?



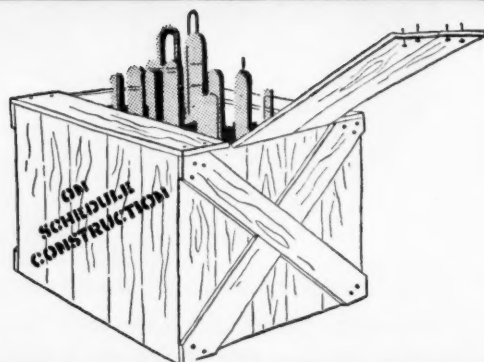
Lummus can engineer and construct a plant for you that will use your process



Or go to the ends of the world to secure a process for you



Or our engineering development center will work with you from start to finish



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Business Newsletter

CHEMICAL WEEK

January 19, 1957

Price fixing suits added to the woes of chemical firms this week.

First witnesses have been called in the government's antitrust suit against Union Carbide and the Vanadium Corp. of America, filed in 1948. Testimony highlights: between 1933 and 1945, Vanadium sold two-thirds of the ferro-vanadium and vanadium oxide sold in the U. S., although it had no source of ore and, between 1933 and 1940, Union Carbide sold vanadium oxide to Vanadium for 80¢/lb., 25¢ below the prevailing market price.

Chemical firms making calcium chloride were accused of price-fixing in a state suit filed in Milwaukee. Five basic producers—Allied Chemical, Dow, Pittsburgh Plate Glass, Columbia-Southern, and Wyandotte—were among the firms named in the action.

•
It's Heyden Newport Chemical Corp. now. Overcoming a last minute snag, Heyden Chemical has acquired Newport Industries, by exchanging 1½ shares of its common stock for one of Newport. The often-predicted combination (*CW, Business Newsletter, Nov. 3*) will be headed by Heyden's Simon Askin (president) and Newport's Armin Schlesinger (chairman of the board).

•
In another expected move, Chemical Salt Production Co. (Tacoma) merged with Stansbury Salt Co. (Salt Lake City); the new firm will be known as Solar Salt Co. Chemical Salt is an affiliate of Hooker Electrochemical and Pennsylvania Salt Mfg. Co., and the merged firm will be shipping chemical-grade crude salt to the Tacoma-Seattle region for the chlorine-caustic facilities of those firms.

New construction, new acquisitions highlight the week's news.

• Texas Gulf Sulphur Co. has started building a "multimillion dollar" sulfur mining plant at Fannett Dome in Jefferson County, Tex.

• Du Pont will construct a new unit for making sodium carboxymethylcellulose at Carney's Point, N.J. Due for completion early next year, the new CMC unit will produce both refined and technical grade sodium CMC.

• National Cylinder Gas Co. will build a \$3 million addition to its Chicago liquid oxygen plant. It's part of an expansion program at six NCG sites.

• Celanese Mexicana, S. A., has started a formaldehyde and synthetic resin plant near Mexico City, Mexico.

Business Newsletter

(Continued)

• Kaiser Aluminum & Chemical Corp. has set aside \$5 million for enlarging its Baton Rouge, La., works. New engineering building, docks, storage facilities are planned.

• Kaiser has also just acquired the wire and cable business of U. S. Rubber Co. Main manufacturing plant is in Bristol, R. I.

• Canadian chemical processors are calling back workers laid off as a result of the walkout on the Canadian Pacific Railway. A temporary settlement was reached last weekend, and trainmen are now back on the job. Prime Minister Louis St. Laurent has proposed a three-man board to iron out the final settlement terms of the strike that lasted nine days, paralyzed transportation in some parts of the Dominion.

• Machine-vended enzymes for diabetes tests will be tried in Chicago. Small test packets, called Sugar-Chek, will be dispensed for 25¢ from a unit installed in supermarkets, taverns, service stations, industrial plants, according to clinical development laboratories' (Springfield, Ill.) Paul Becker.

• Back on the job—and trying to revive union bargaining programs that have been virtually static the past two months—is Otto Pragan, education and research director of the International Chemical Workers Union. Pragan and three assistants, Marvin Friedman, Cornelius Maiden, and Robert Repas, had been fired about a month ago by outgoing ICWU president Edward Moffet (*CW*, Dec. 29, '56, p. 31).

The four appealed last week to the union's 1957 executive board, and all but Repas were reinstated to their old positions. Ernest Lawrence, to whom Moffett had given Pragan's job, will be retained as a staff member of ICWU's education and research dept. Retention of Lawrence indicates that the union's leaders are still divided, something company negotiators would do well to keep in mind.

• Imperial Chemical Industries reports an overwhelming response to its recently proposed \$112 million loan stock issue. Stockholders and employees who participate in the firm's profit sharing plan were offered a 4% discount on stock; they—and the public—leaped at the plum. By late last week, ICI had received 67,803 applications for some \$667 million worth of the stock.

ICI has made some allotments already. The 27,000 who applied for \$560 or less were given the full amount of their requests. The nearly 40,000 applicants for amounts between \$700 and \$2,800 got the first \$560 worth, plus $\frac{1}{8}$ of the rest of the request. The 1,800 who asked for more than \$2,800 worth were allotted $\frac{1}{8}$ of the amount sought.

Goodrich-Gulf Chemicals, Inc.



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"the preferred rubber" for intricate automotive extrusions

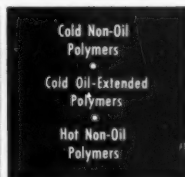
THESE complicated windshield and rear window extrusions are excellent examples of why Ameripol man-made rubber is being specified as "the preferred rubber" for more and more automotive parts.

Ameripol has exceptional firmness in the uncured state. This means that intricate Ameripol extrusions retain their precise shapes until cured. And as finished

products, they're not only accurate, but possess superior resistance to wear and tear. These outstanding advantages point up why you'll find Ameripol used in a growing number of quality products . . . tires, typewriter rolls, shoe soles and heels, conveyor covers and chute linings.

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(million dollars)

120—

90—

60—

30—

10—

5—

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1936

GAF's Perplexing

Sales are rising
to new highs

I. G. Chemical changes name to General Aniline & Film, merges with General Aniline Works.

GAF merges with Agfa-Ansco and, nine months later, acquires Ozalid Corp.

U. S. government of GAF stock of that company i

Tougher Competitor in the

Chemical management is once more taking a speculative look at General Aniline & Film Corp., now that ownership of the company may be about to pass from the U. S. Government to private hands.

Late this Monday afternoon, U. S. Attorney General Herbert Brownell took the final step needed to put GAF up for public sale. He filed a detailed prospectus and registration statement with the Securities & Exchange Commission.

As the plan stands now, only about 80% of the GAF stock is to be sold, in order to protect non-enemy stockholders in the Swiss holding company once known as I. G. Chemie, now known as Interhandel, which seeks to

get back some of the \$50 million it claims it paid for GAF stock before the war. Some Interhandel shareholders—if they can prove they were non-German citizens during World War II—hope to get back at least 17% of the vested stock.

Standing the Gaff: Such a sale has been long-awaited and enthusiastically endorsed by present GAF personnel. They, along with others close to the company, feel (to perhaps differing degrees) that the long government ownership has kept management from realizing the firm's real potential. Capital for expansion has been obtainable only through bank loans, and from retained earnings—one factor that's held profits down over the years. Too,

the uncertainty of GAF's status has caused some firms that might be potential large-scale customers to lose confidence, sign sales contracts with others. And of course there have been some charges—from sources that could hardly be considered disinterested in the matter—that politically oriented GAF managements have not been overly aggressive.

But whatever the reasons, the result has been an after-tax profit record that's stayed about constant over the last 20 years (*chart*), though sales have shown a 20-fold increase.

Reasonable Show: Considering the unusual restraints under which GAF has had to operate, many think the firm has done surprisingly well. Today,

Profit Picture

**But profits remain
at this plateau**

'45

'50

'55

'56

'57

nt seizes 98%
grounds
German-controlled.

Swiss holding company
Interhandel
begins court fight.

GAF and its U. S. government-owned
sales agent, General Dyestuff Corp.,
are merged.

Making?

its dyestuffs and chemical division does the biggest sales volume. Other divisions: Ozalid and Ansco.

Plans to Plants: All the divisions are in the midst of building programs, using the \$29 million for expansion that the company has set aside for '57 and '58—substantially larger amounts than have ever been allotted in the past. Total grants for expansion between '47 and '56 were \$65 million.

Currently under construction in Linden, N. J., is the dyestuff and chemical division's new 60,000,000 lbs./yr. ethylene oxide plant that will cost an estimated \$8 million. And, in Calvert City, Ky., GAF will build a 25 million lbs./year detergent unit costing "several hundred thousand dollars."

This unit will be producing in about three months, the oxide unit, in '58.

Calvert City is also the site of the firm's new high-pressure acetylene products plant.

Two other factors could well make the company a juicy plum for its new owners: net worth and property value. The company has a present net worth of \$106.4 million, more than twice the \$45.1 million figure of 1942—the year GAF was seized as alien property. What's more, the company then had a net valuation in plants, property and equipment of \$21.6 million. Today, it's \$58.5 million.

Numerous companies have been reported "interested" in acquiring GAF outright, among them General Tire & Rubber, National Lead, Minnesota Mining & Mfg., M. W. Kellogg, W. R. Grace and Monsanto. None of these

have openly declared themselves potential buyers.

A perhaps more likely possibility is that an investment syndicate will buy the stock, split it for easier marketing and resell to the public. Several Wall Street firms that have dealt in chemical stocks in the past are reportedly eyeing GAF.

Hopes Are High: GAF is not worrying right now about prospective buyers. All it's hoping is that the shackles which have hampered its growth for so many years can soon be removed—or at least loosened. There may, of course, be some delays in the firm's transfer to public ownership if Interhandel launches new court cases to push its ownership claim. But as things stand now, GAF is looking forward to an era of growth it hasn't felt in nearly two decades.



PHYSICIST BETHE: For private development, fast breeders are safer.

Reactor Safety Questioned

A group of high-powered witnesses were brought forward by the Power Reactor Development Co. last week to assure the Atomic Energy Commission that the company is both technically and financially able to build a safe nuclear power project.

The public hearing, aside from explaining what is to be done to assure adequate safety measures in nuclear units, is important in other respects:

- Since it's the first ever held on the subject by AEC, it may set precedents for future regulation of the atomic power industry by a government agency (*CW*, Dec. 22, p. 24).
- It brings to focus contentions of labor unions (the hearing was demanded by AFL-CIO unions) that the public, not private industry, should be the beneficiary of tax-supported atomic technology and research.

PRDC, a company that's jointly owned by 21 utility concerns, proposes to build a \$43.2 million, 100,000 kw. fast-breeder power reactor at Monroe, Mich. (about 30 miles south of Detroit). The proposal has been under fire ever since disclosure, six months ago, that an AEC advisory committee on reactor safeguards had questioned

the safety of the project on the basis of then-existing information.

Last week's hearing was originally called at the request of the United Auto Workers, the International Union of Electrical, Radio and Machine Workers, and the International Union of United Paperworkers of America, all AFL-CIO.

On the Stand: The financial soundness of the company was attested to by Ernest Acker, president of Central Hudson Gas & Electric Corp., a PRDC member company, and a vice president and chairman of the finance committee of the development firm.

On the technical side, Hans Bethe, Cornell University's physics professor, consultant to Atomic Power Development Associates (an affiliate of PRDC), and a well-known nuclear physicist, testified that the fast breeder is in many respects safer than ordinary thermal reactors. He was supported in this view by Norman Hilberry, deputy director of Argonne National Laboratory, by AEC's own Reactor Division Chief Kenneth Davis; and by Walter McCarthy and Alfred Amorosi, both of APDA.

Now that company testimony has

been delivered, the three labor unions have 10 days in which to study it and present their objections, if any, to admissibility of the witnesses or their presentations. After this there will be further argument and cross-examination before the hearing examiner makes his findings.

Union Complaints: The unions have charged that the AEC acted illegally in issuing a construction permit last August to PRDC for the proposed reactor because it is "inherently unsafe."

AEC, in granting the request for a hearing, would not allow any discussion of the legality of its own actions in issuing a construction permit. Nevertheless, this question—the big one in union minds—promises to become a lively issue as the hearing progresses. Since the unions are anxious to keep atomic technology and research vested in public hands (thus, it is said, to insure more rapid nuclear development and more jobs) it is likely they will take every opportunity to get the issue into the hearing.

Points Clarified: Following the hearing, representatives of the unions held a press conference to "clarify the union position, not to rebut any of the testimony." Key points made by Donald Montgomery, Washington director of the UAW, reiterated earlier union statements.

Montgomery said the unions will continue to try to show that AEC was guilty of an illegal act in issuing the construction permit. Moreover, says Harold Green, a union lawyer who has applied for and been granted access to restricted data, there is important evidence in certain documents which would help the union case if the material were not classified. He also cites evidence that PRDC was forced by AEC to undertake the project prematurely.

One other complicated legal aspect which may blow up into a major hassle, is a request by PRDC that it be exempted from the safety and financial requirements set up by AEC. Company lawyers contend, however, that this request was merely a formal step to "perfect the pleadings" of the company and clarify the legal issues involved. Union lawyers and AFL-CIO vice-president Walter Reuther say the request proves the project is unsafe.

New Boost for Oil Sands

More petrochemical development in Alberta, Canada, seems just around the corner now that the vast oil sands in the Athabasca region of northeastern Alberta will be exploited.

At least ten firms* are currently stepping up exploration and development activities to discover whether oil production from the fields can be brought into world markets. Impetus for the program, hitherto considered economically unattractive, derives from the Suez Canal blockage, and on a longer-range basis, from general oil production and delivery uncertainties in the Mideast.

The ten companies have jointly reactivated a committee which has co-operatively studied development of the sands. Total leaseholdings of this group currently amount to some 23,000 acres of land; they have exploration rights to an additional 30,000 acres. Major interest in such land is held by Calvin Consolidated Oil and Gas, owned 91% by Canadian Petrofina, in turn an affiliate of the giant Belgian Petrofina.

Besides the group of ten, numerous other firms have exploration permits or registered holdings along the Athabasca River. These include Can-Amera, Royalite Oil, Shell Oil, Union Oil, Supertest Petroleum, Richfield, Sun, Canadian Pipelines, Great Canadian Oil Sands, Mic-Mac Consolidated, Bailey Selburn, Baysel Pipelines, and Home Oil Co.

The development project to be launched in the region will likely cost approximately \$60 million, though some estimates run as high as \$100 million. The Alberta government's official oil-sands publication—the 1950 Blair Report—says an eight-inch pipeline would also be built. This would extend across 300 miles of undeveloped territory to Edmonton, where the oils would be further processed for marketing.

Under the plan, a 30,000 bbls./day plant would be built to convert the asphaltic bitumen sands into pumpable, synthetic crude oil via a hot water separation technique.

* Calvin Consolidated Oil and Gas, Ltd., Canadian Atlantic Oil Co., Pacific Petroleum, New Continental Oil Co. of Canada, Ltd., Charter Oil Co., Canadian Collieries, Ltd., Amurex Oil Development Co., West Canadian Petroleum Co., Merrill Petroleum Ltd., Calumet Creek Oil.

Price of the crude has not been estimated. The Blair report stated that oil could be produced and delivered at the Great Lakes terminal of the Canadian pipeline for \$3.10/barrel and sold for at least \$3.50. It's believed, however, that more than a 40¢-per-barrel profit margin would now be possible.

The Great Lakes terminal, of course, is not the only possible oil outlet. With oil imports into the U.S. Pacific Northwest and parts of California from the Edmonton area increasing, it is conceivable, say trade sources, that much of the supplies may eventually end up in the U.S.

Lorain's Smoke Screen

East side residents of Lorain, O., are up in arms over plans of National Gypsum to build a \$6-million wall-board plant in the city, on grounds that the plant will add to an already difficult air pollution situation.

Last week residents heard the latest report on a joint meeting held by representatives of the city's police and fire departments, the city council, and heavy industries to discuss Lorain's pollution problems. The meeting was one of the direct results of Gypsum's announcement six months ago that it wanted to build near the exact geographical center of the city and a short distance from a heavily populated section in the city's east side.

Tough Clause: Making things particularly tough for Gypsum is a clause in the city's zoning regulations which specifically forbids establishment of cement or gypsum plants in the city.

The company has petitioned the zoning review board for a variance from this zone law stipulation, and for a building permit. Hearings, postponed once, were scheduled for late this week.

Plant Tour: Gypsum has tried to head off complaints by taking city officials on a tour of one of its plants at Burlington, N.J., to show them how it controls air pollution.

Everyone, but the Eastsiders who took the tour was enthusiastic about Gypsum work. These dissenters, however, argued that they received a distorted picture of gypsum plant conditions because the tours were under the supervision and control of the com-

pany, and because the Burlington plant had started up only six months ago.

Old Problem: Despite several proposed air pollution ordinances dating back as far as 1951, Lorain's efforts to combat pollution have resulted in little more, say local critics, than a confusion of proposals. Last week's report added to the muddle when it showed that different groups in the city were mistakenly studying different proposals.

The mixup came about when the city agency committee voted to distribute copies of an ordinance, proposed in 1952, that dealt with smoke abatement as well as air pollution, to interested parties for their information prior to the hearing. Instead of the 1952 proposal, however, copies of a proposed ordinance drafted in '54, which dealt only with smoke abatement, were sent to the interested parties.

So industry representatives have been studying one proposed ordinance, while the joint committee is considering a far more stringent one.

Nobody is willing to predict what the upshot will be, but with Gypsum seeking zoning changes, and the city seeking anti-pollution ordinances, it's likely, say observers, that confusion will last a while longer.

EXPANSION

Oxygen: A 70 tons/day oxygen generator will be added to Granite City Steel Co.'s Granite City, Ill., plant complex. Cost of the unit, to be built by Air Products Inc., Allentown, Pa., is about \$1 million.

Industrial Gases: Air Reduction Sales Co., division of Air Reduction Co., Inc., will double the capacity of its plant in Butler, Pa., to meet increased demands for industrial oxygen, nitrogen and argon.

Pulp & Paper: Time Inc. and Crown Zellerbach Corp. will build a jointly owned \$31-million mill on a site CZ owns near Baton Rouge, La., to produce machine-coated printing paper. Output from the mill will be shared equally by the companies. The new unit is scheduled to go onstream late in '58, will have an annual capacity of 78,000 tons. To help finance its share of this project, as well as its

Washington Angles »

» **Conversion of the Louisville butadiene plant** to other uses will come under serious Congressional study now that Rep. Carl Vinson (D., Ga.) has offered a bill that would permit a purchaser of the plant to convert it for production of any chemical or other product it wishes. What's more, the plant would not have to be reconverted to butadiene production during a national emergency.

Government officials have been considering such a plan for some time (CW, Jan. 5, p. 24), and Federal Facilities Administrator Laurence Robbins is in full accord with Vinson's bill.

Congress should schedule another round of bidding for the plant, Robbins said, in a letter to Vinson last week.

» **More private atomic power development** is being sought by the Atomic Energy Commission. In inviting private business to participate for the third time, AEC said that if industry doesn't undertake more construction of power reactors, the commission will seek funds from Congress to go ahead with development on its own.

AEC set a June 30, 1962, deadline for starting of the new reactors. Based on current experience, this means that interested companies will have to commit themselves before the end of '57.

The invitation differed from the two previous ones, setting no deadline for submission of pro-

posals, stating that bids would be considered singly, not as a group. Too, AEC is offering financial help solely for research and development, not for construction as had been done previously.

» **Easing of depreciation regulations** may be in prospect for natural gas companies. The Federal Power Commission has suggested an amendment to its rules for such companies that would provide deferred tax accounting for income tax accruals.

The amendment would provide for two new accounts, related to liberalized depreciation accounting and other income tax deferrals, and would revise existing accounts.

Comments on the proposal will be accepted by the Commission until Mar. 1.

» **Study of the El Paso-Pacific Northwest merger** plans will be made by the U.S. Dept. of Justice—which has decided it has jurisdiction over the matter under the antitrust laws. Since announcement of the proposed transaction, (CW Nov. 17, p. 23), Justice, FPC, and the Securities & Exchange Commission have been trying to decide which should examine the case.

The Justice Dept. is now studying it to determine whether or not an antimerger suit should be brought to challenge the merger's legality.

This does not mean, necessarily, that an anti-trust will be filed, but it does mean that El Paso and Pacific will have to undergo a staff-level anti-trust review.

other planned expansion (CW, Sept. 15, '56, p. 28), Zellerbach has borrowed \$60 million.

COMPANIES

Four fertilizer producers doing business in the Northeast have merged. The firms: Apothecaries Hall Co., Waterbury, Conn., Rogers & Hubbard Co., Portland, Conn., Woodruff Fertilizer & Chemical Works, North Haven, Conn. and Old Deerfield Fertilizer Co. of South Deerfield, Mass. Name of the new firm: Hubbard-Hall Chemical Co.

St. Regis Paper Co. has completed acquisition of J. Neils Lumber Co. (Portland, Ore.) through an exchange of stock. Two and one half shares of St. Regis common were exchanged for each common share of Neils. St. Regis now owns 98.5% of the Portland firm.

Corn Products Refining Co. has sold all its holdings in Commercial Sol-

vents Corp. to Lehman Bros., the New York investment brokers. The 57,579 shares, about 2% of Commercial Solvents' outstanding stock, were acquired by Corn Products in the '30s when the two companies had several jointly owned projects under way. Now, the firms explain, their interests have diversified, and Corn Products feels it can use the funds more profitably as working capital. However, both companies will retain present reciprocal memberships on each other's board: an executive from each firm is a member of the other's board.

Procter & Gamble Co. has now acquired the assets of Charmin Paper Mills Inc. in exchange for P&G common stock. An exchange of one share of P&G for two shares of Charmin is involved.

FOREIGN

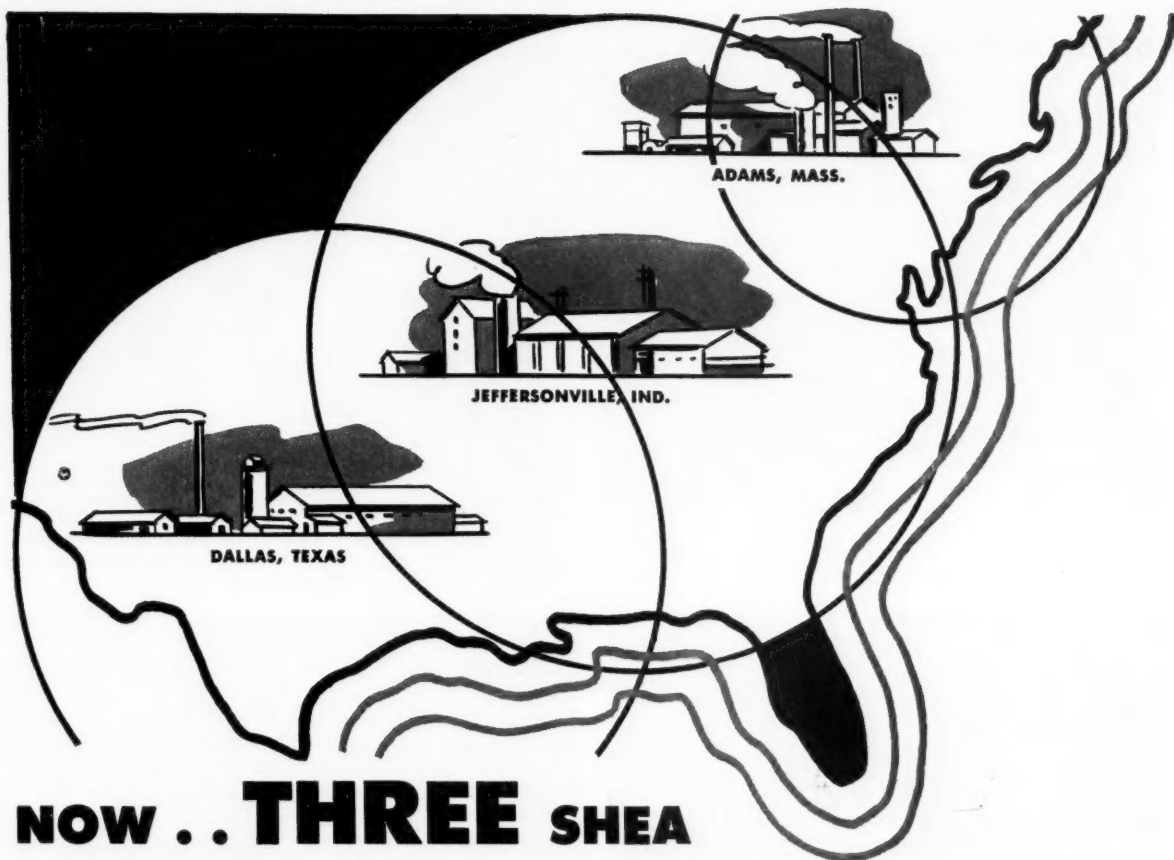
Ammonia/Japan: Asahi Chemical Industry Co., large Japanese synthetic

fiber and chemical producer, will build a new 50 tons/day ammonia plant at Noboeka on Kyushu. Contractor is Chemical Construction Corp.

Nitric/Britain: Fisons Ltd., British chemical and fertilizer producer, will add a 250 tons/day nitric acid unit to its present plant complex at Stanford-le-Hope. Engineering contractor is Chemical and Industrial Corp., Cincinnati.

Sulfuric/Brazil: Sociedade Industrial de Minerios e Acidos (SIMA) will build a unit in Santa Luzia to produce 125 tons/day of sulfuric acid. Raw materials will come from Ouro Preto.

Triple Superphosphate/Mexico: The Mexican government is blueprinting a \$3.2 million triple-superphosphate plant at Coatzacoalcos, Veracruz. The new unit, designed to turn out 150 tons/day of triple superphosphate, is now scheduled to be operating by late '58.



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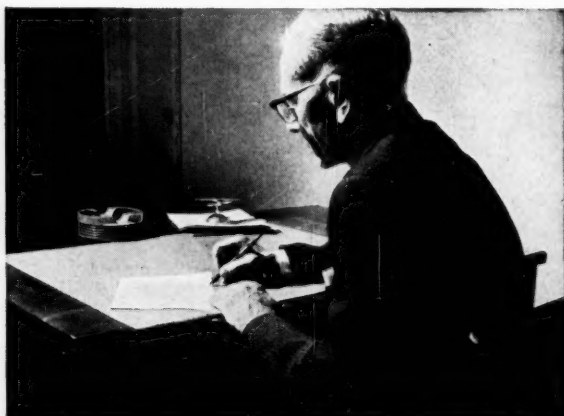
14 SEPARATE REQUISITIONS for assorted chemicals come in to New York office of national manufacturer. Purchasing agent has single order made out and calls nearby Merchants office.



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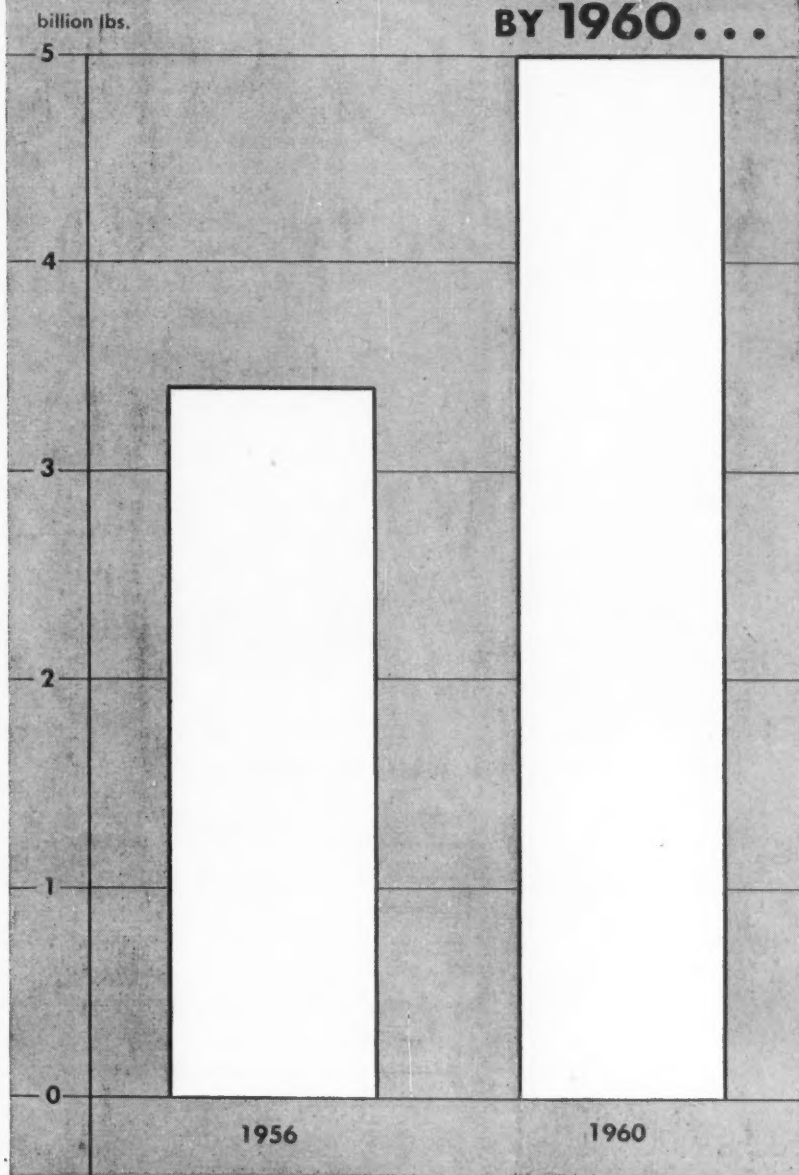
Charting Business

CHEMICAL WEEK
January 19, 1957

U.S. ALUMINUM CAPACITY

WILL EXPAND 1.5 BILLION LBS.

BY 1960 . . .



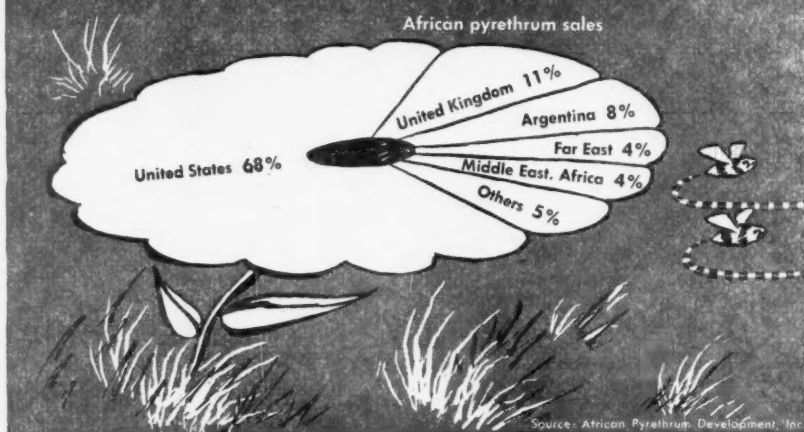
THE ambitious expansion program under way and planned by U.S. aluminum producers (*CW*, Dec. 15, p. 79) foreshadows increased sales for chemical makers. Production of a ton of the primary metal requires about 4,000 lbs. of alumina; 1,300 lbs., of carbon paste; 80 lbs. of aluminum fluoride; 60 lbs. of cryolite. And production of the 4,000

lbs. of alumina requires some 8,000 lbs. of bauxite; 300-600 lbs. of soda ash; 200-400 lbs. of quicklime; 1,600-3,200 lbs. of coal (or 20,000-40,000 cu. ft. of natural gas). Multiply these figures by new tonnage aluminum output planned for 1960 and you come up with a major new across-the-board demand for chemicals.

Charting Business

(Continued)

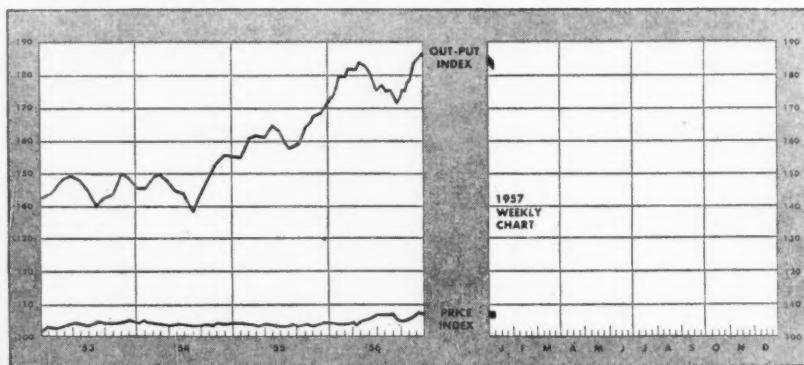
U.S. - LEADING BUYER OF PYRETHRUM - Last year purchased 68% of African supply



WARTIME restrictions and the new synthetic insecticides proved near fatal to pyrethrum flower cultivation. But, today, production is on the upswing. African pyrethrum growers, who now supply 95% of world demand, are expanding their facilities, while compara-

tive newcomer Equador's operations are progressing at a good clip. During the past twelve months, the U.S. imported 8 million lbs. of the flower—equivalent to 100,000 lbs. of pure pyrethrins. Forecast for 1960: U.S. demand for pyrethrum will double.

BUSINESS INDICATORS



WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	186.5	183.0	175.0
Chemical Week Wholesale Price Index (1947=100)	106.9	106.9	105.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	429.9	435.0	470.6

MONTHLY

(Index 1947-1949=100) Wholesale Prices	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	124.6	124.2	111.3
Chemicals and Allied Products	108.3	108.2	106.6
Industrial Chemicals	122.4	122.5	119.4



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. . . and Dropped it'

"Tests are far from 'the whole or final answer' to evaluation and selection of people for job assignments. We have learned that the psychological test method, except in a few specific instances, provides relatively little information that is of help to those responsible for evaluation and selection of professional personnel—chemists and engineers."

Personnel Testing—Boon or Bane?

Chemical process management is sharply divided on the advisability of using psychological testing for present and prospective employees at various job levels—even though its use of such tests appears to have doubled within the past five years.

A CHEMICAL WEEK survey indicates that most of the larger and medium-sized chemical companies use such testing to some degree (*table, p. 31*). But a sizeable minority of these firms—including some that have tried testing rather extensively—see no use for them at all.

And even among the chemical concerns that are using tests, there's no agreement on where and how the tests should be applied. Some firms examine only candidates for salaried positions, others, only clerical applicants, and still others use them primarily for production and maintenance workers.

More Testing Ahead: All in all, it appears that reliance on this kind of test is gaining ground. Five out of the 19 non-testing companies surveyed say they plan to install testing programs during the next year or two. Thus, three quarters of the companies responding to the survey now approve of such testing.

On the other hand, two companies say they've tried personnel testing

and found that it didn't pay out. (Retort advocates of testing: those companies might well have gone astray in use or interpretation of the test, or may have used the wrong criteria in trying to correlate test scores and job performance.)

Mainly for Applicants: Principal usage of these tests is in pre-employment examinations; all 33 companies that have testing programs now use this method for at least some categories of job applicants. In a few cases, such testing is being used at only one or two plants or offices on a pilot-test basis. If it works out, the practice may be used on a company-wide basis.

Pre-employment testing is most often used for salesmen, less often for clerical employees, engineers and scientists, and executives, in that order. It is least often used for watchmen and unskilled laborers.

Most of the companies that do pre-employment testing say that test scores are a "major factor" in deciding whether to hire the applicant. Several firms refused to accept any of the *CW* questionnaire's qualifying adjectives.* They insisted that a test rating is simply one of a number of factors of approximately equal importance. On this point, Frank

* "Deciding," "major," "minor."

DePhillips, professor of management at New York University's School of Commerce, finds that too many companies take one extreme position or the other: either they do no testing at all, or they rely too heavily on test scores—losing many potentially good leaders in the process. Few companies, he feels, strike a happy middle ground, using tests as an adjunct to long-term observation, evaluation of personnel records, merit-rating, special appraisals, and depth interviewing of personnel.

Testing on Transfers: Companies use tests much less frequently when it comes to transfers and promotions—and apparently not at all in connection with salary adjustments. Only four companies say they always test candidates for promotion and transfer; 14 report testing for some job categories—such as "supervisors in plants," "management, technical and administrative positions," "sales," and "apprentices." Others test "if thought advisable," or "when requested." Some "seldom or never" use psychological tests in determining transfer and promotion questions.

Among the 18 companies that do use testing for this purpose, two say it's usually the deciding factor; nine call it a major factor; six say it's a minor factor; one reports test-

ing as just one of several co-equal factors.

The 33 firms that test applicants say that "mental ability" ranks first among the characteristics that they want to learn through their tests. "Aptitude" comes in a close second (but this term may have been too broadly interpreted by some concerns as meaning overall suitability for a given position). Industrial psychologists term "aptitude" as meaning ability to learn a certain job. Test programs were also used to evaluate these characteristics: personality, knowledge of field, specific job skills, social adjustment.

Sample Findings: Company executives who haven't looked into psychological testing might be surprised at the detailed evaluations specialists who score and interpret these tests can come up with (though some testing critics would consider "evaluation" too kind a term). Take this excerpt from a private testing service's report:

"X has capacities for tact and for sizing up people in face-to-face social situations. He possesses mature insight into human nature and earned a good rating for sense of humor.

"X is not too much at home in handling complicated arithmetical problems. He does, however, seem to be at home in the area of supervising others. The only ratings that are lower than desirable for the job concerned are those for ingenuity, resourcefulness and capacity to take the responsibilities of management, as well as the capacity to work alone.

"If X is upgraded, he will need strong direction until he is over the hump in his new duties and responsibilities."

As of now, psychological testing appears to be fairly well established among larger chemical companies, but on a rather irregular basis. As intensive research continues in universities and management service agencies as well as in corporate personnel departments, it's entirely likely that in the years ahead, such companies will be able to use testing methods increasingly attuned to the specific requirements of the particular job—and company.

HERE'S HOW CHEMICAL FIRMS RATE PERSONNEL TESTING PRACTICES

Out of 52 chemical companies of all sizes:

- 33 are using personnel tests now.
- 19 are not using them, of which—
 - 5 plan to start testing programs soon.
 - 2 have tried tests and have dropped them altogether or nearly so.

Of the 33 testing programs now in use:

- 15 are conducted entirely by the companies' own personnel departments.
- 5 are conducted entirely by private testing or consulting services.
- 3 are conducted entirely by college testing services or other non-profit agencies.
- 7 are conducted partly by the companies' personnel departments and partly by private testing or consulting services.
- 1 is conducted partly by a private testing or consulting service and partly by the company's executive development office.
- 1 has been in use less than 1 year.
- 14 have been in use 1 to 4 years.
- 6 have been in use 5 to 9 years.
- 10 have been in use 10 years or more.

Pre-employment testing—under the 33 programs now in use—covers applicants for positions as:

	Always	Sometimes	Never
Executives	11	11	11
Salesmen	17	6	10
Engineers, scientists	12	9	12
Managers, foremen, supervisors	9	12	12
Clerical and administrative employees	16	14	3
Skilled craftsmen and chemical operators	10	10	13
Semi-skilled workers	7	13	13
Unskilled laborers	4	5	24
Guards, watchmen	2	9	22

Where pre-employment testing is used, it's rated as follows in deciding if applicant gets the job.

- "Deciding factor" by 4 companies
- "Major factor" by 18 companies
- "Minor factor" by 7 companies

Court Reversals of Patent Office Decisions Are Rising

These Chemical Patents Were Upset:

Product or Process	Case	Court Ruling	Point of Law
Pharmaceutical compound for treatment of irreversible shock, coronary occlusion	Sterling Drug v. Watson	patent granted	lack of prior art
Method for preparing glucuronic acid	Reiners v. Muhltretter	Reiner's date prevailed, case remanded	prior reduction to practice
Bis-peroxide preparation and use	Young v. Bullitt	patent awarded Young	prior reduction to practice
Process for preparation of amines	in re Schlitter	patent awarded	lack of prior publication
Process for de-inking paper	in re Krodel	patent awarded	claims judged functional
Method and apparatus for extraction and utilization of thermal energy from atomic decomposition of uranium	in re Chilowsky	case remanded for further proceedings	Patent Office rejection lacked sufficient explanation
Process for sizing paper	in re Keim	patent granted	invention established over prior patents

These Chemical Patents Were Upheld:

Process for preparing sebacic acid	Smith v. Lane	priority awarded Lane	Smith failed to reduce to practice
Mineral oil lubricant	Prutton v. Fuller	priority awarded Fuller	priority of invention
Use of Acryloid 710 in production of polymerized esters	Lamm v. Watson	patent denied	specifications improperly stated
Chlorinated hydrocarbon product	in re Inman	patent denied	lack of invention
Tetrachlorocyclopentadiene and process for production	in re Baranauckas	patent denied	disclosure of prior art
Production of aluminum fluoride	in re Edwards	patent denied	disclosure of prior art
Process for producing phosphorus compound for animal feed	in re Le Baron	patent denied	disclosure of prior art

In Court: Hopes Rise For Rejected Patents

If the trend of the past two years continues, management may find it advisable to routinely appeal to the courts all adverse decisions of the Patent Office. That's the prospect, if the current inclination of judges to overrule the Patent Office continues. Patent Office decisions, during the 5-year period ending in mid-1954, had a 5-to-1 chance of survival in the courts (*CW*, Aug. 28, '54, p. 26). And during 1955 and early '56, Patent Office edicts enjoyed a 3-to-1 survival rate on appeal (*CW* Sept. 8, '56, p. 52).

A study (table) of 14 Patent Office refusals of chemical patent applica-

tions in 1956 shows that half were reversed by the courts.

One possible future deterrent to a mounting number of appeals of Patent Office decisions: the patent law changes proposed by science administrator Vannevar Bush (*CW*, Jan. 12, '57, p. 31) as a means of cutting down the number of patent litigations.

However, several of the seven recent reversals might well have gone through the same appeal channels, even if the Bush proposals were in effect. For example, both the Krodel and Chilowsky rulings were reversed because the court felt the Patent Office

was guilty of an error in judgment—rather than because additional information was introduced, as is often true in patent litigation. Such matters of judgment are apt to continue to be litigation-worthy, regardless of the thoroughness of the pre-patent investigation system proposed by Bush.

But, until changes in the law are made, the obvious pattern developing with respect to the survival rate of Patent Office rulings bears watching, indicating, as it does, the durability of future chemical patents—and the advisability of appealing adverse Patent Office decisions.

THE GOOD EARTH IS TOUGH ON TIRES

Plowing, planting and cultivating America's ever-increasing harvests are grueling tasks for tractor tires. The punishing abrasions exerted by stones and earth, the tremendous thrust of traction, the long exposure to the hot sun . . . these call for tires of extreme toughness. Similarly, high speeds and long-distance driving call for extra durability in truck and car tires.

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Atlantic Olefins help build stronger, long-lasting tires. Olefins are hydrocarbons used in making anti-oxidants, which inhibit the dangerous drying-out effects that attack sidewalls due to oxidation. In addition, Olefins stabilize the rubber against degradation due to heat and light. Result: the consumer gets a tire that is more blowout-proof and abrasive-resistant.

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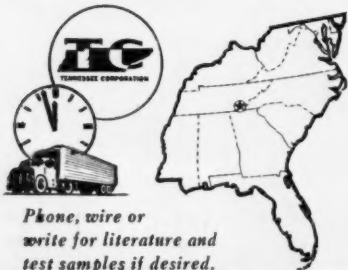
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ADMINISTRATION



SOUTHERLAND: On corporate voting lists, he calls for more data.

LEGAL

Stockholder Lists: Companies incorporated in Delaware must now include the address and number of voting shares held by each stockholder when preparing the list of stockholders eligible to vote in a corporate election.

The Delaware Supreme Court has decided that addresses and holdings must be parts of such lists—which must by law be prepared and made available 10 days before the election, to give the interested stockholder information he may intelligently make use of at the election. "Only a moment's reflection," Chief Justice Clarence Southerland wrote, "is needed to see that a mere list of names cannot supply the attending stockholder with any information that can be effectively used in connection with the voting at the meeting."

The case involved Bradford Magill, a stockholder in North American Refractories Co., and the corporation itself. Magill had filed suit in chancery court before a corporate vote, asking a declaratory judgment that a list of North American stockholders eligible to vote in the forthcoming election did not comply with the law, because it was merely a list of names. His requests for judgment and injunctive relief were denied by the Delaware chancery court.

After the corporation election last May, Magill filed a supplemental complaint to review the legality of the election. The court then held that the list complied with the statute and that

the election of the management directors was legal. Magill then appealed to the state supreme court, which reversed the lower court decision.

Du Pont 'Tynex' Suit: E. I. du Pont de Nemours & Co. (Wilmington, Del.) has filed suit in federal court for the Southern District of New York against Kingston Brush Manufacturing Co. and United Brush Manufacturers, charging illegal use of the word "Tynex" by the defendants.

The suit asks for an injunction enjoining and restraining the brush manufacturers from using the Du Pont trademark "Tynex" or any imitation in connection with the manufacture, sales or advertising of paint brushes.

The suit also asks that the defendants be enjoined from claiming their brushes contain "Tynex" nylon bristles.

The complaint charges the defendants label their brushes "100% Tynex tipped and flagged," but that they do not contain 100% "Tynex."

LABOR

Key Appointments: Right-hand man to James Mitchell as he begins his second term as Secretary of Labor will be James O'Connell, 50-year-old civil engineer who, for the past 10 years, has been vice-president of a shirt company in New York. As Undersecretary of Labor, O'Connell—an advisor to the department for nearly three years—will help Mitchell try to "sell" Congress on the idea of extending the \$1 minimum wage law's coverage to include many additional workers. He'll also push the Administration's proposed amendments to the decade-old Taft-Hartley Law.

One other key labor post to be filled as the Eisenhower Administration starts its new term: a vacancy on the five-man National Labor Relations Board. This assignment is expected to go to Joseph Jenkins, 38-year-old Texas lawyer who was an NLRB trial attorney for four years and later a regional executive of the Wage Stabilization Board.

One-year Pact Asked: Union opposition to the trend toward long-term labor contracts has appeared at Sarnia, Ont., where the Canadian government-owned Polymer Corp.—maker of synthetic rubber—has of-



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DECANOIC ACID—for preparing paint dryers with improved hydrocarbon solubility; barium salt as a stabilizer for vinyl chloride resins; as an intermediate for plasticizers and lubricants.

2-METHYLPENTANOIC ACID—for the production of diester lubricants, plasti-


cizers, non-yellowing alkyd resins, flavoring.


MORE INFORMATION AND OTHER CHEMICALS


There are many more new chemicals available. Twenty-one are featured in the 1957 edition of "Physical Properties of Carbide and Carbon Chemicals." This quick and easy reference contains the latest physical property and condensed application data for more than 335 organic chemicals.

• • •

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The new Wilner wood flour mills were engineered to provide the highest precision and automation in processing control. The plants are so completely automatic, they could be operated by pushbutton from the president's office. Continuous moisture and rotap testing guarantees that the flour, once tailored to the mix or formulation, never varies. The user is assured of wood flour milled from kiln-dried, clear white pine, free from contamination, with a low moisture content, and in any mesh size desired.

Typical Analysis 140 Mesh Wood Flour

Thru	On	trace
	100	
120		99.2
140		96
170		86
200		75.6
270		49.2

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Wilner Wood Products Co., Norway, Me.



ADMINISTRATION



SENATOR PURTELL: For a 35-hour work week, a new trial balloon.

ferred its 1,600 hourly-paid employees a three-year contract with moderate wage increases each year. Instead, the Oil, Chemical & Atomic Workers Union is asking for a one-year pact with a 20¢/hour across-the-board pay rise. A conciliation board is expected to deal with the dispute.

In the U.S., two chemical labor disputes were resolved last week after one-week strikes by different locals of the International Chemical Workers Union. Mediation brought settlement of a controversy at the General Aniline & Film Corp.'s plant at Rensselaer, N.Y., where union members had been protesting a company rule on vacation work. A new contract with a 9¢/hour wage increase ended the walkout at the Olin Mathieson Corp. plant at East Alton, Ill.

Shorter Work Week: A move toward the much-discussed 35-hour work week is planned by Sen. William Purtell (R., Conn.). Purtell—a member of the Senate's Labor and Public Welfare Committee—says he'll introduce a "primarily explorative" resolution aimed at putting federal government employees on a 35-hour week. This step, he adds, may lead to hearings that would turn up valuable information on the possibility of a similar work schedule for workers in private industry. The Senator holds that a shorter work week is "inevitable, having great ramifications that we must study and prepare for."

'Quit Rate' Dips: Commissioner Ewan Clague of the U.S. Bureau of Labor Statistics is calling attention to a drop in the number of industrial workers voluntarily leaving their jobs. In "chemicals and allied products," the quit rate fell from 2.1 per 100 employees in September to 1.0 in October and 0.7 in November.

KEY CHANGES

Allan J. Greene, to administrative vice-president and member of the executive committee, Chas. Pfizer & Co.

Thomas K. McCarthy, to vice-president and counsel, Kaiser Aluminum & Chemical Corp. (Oakland, Calif.).

Wesley C. Ekholm, to general manager of manufacturing, Carbon Black and Pigment Division, Columbian Carbon Co. (New York).

Maurice F. Dufour and **Forbes K. Wilson**, to vice-presidents, Freeport Sulphur Co.

Robert S. White, to production manager, Soybean Division, Archer-Daniels-Midland Co. (Minneapolis).

Clarence J. Schilling, to vice-president and chief engineer; and **Edward Donley**, to vice-president and general manager; Air Products (Allentown, Pa.).

G. C. Bradshaw, to general purchasing agent, Mallinckrodt Chemical Works (St. Louis).

Robert Paul Blaine, to manager of international sales, Goodrich-Gulf Chemicals.

Jacques de Brabant, to president, Carborundum S. A. (Sao Paulo, Brazil); **William H. Wendel**, to group vice-president; and **John F. Claydon**, to general manager, Coated Abrasives Division; all of Carborundum Co. (Niagara Falls, N.Y.).

William J. Rothemich, to vice-president; **William N. Davies**, to president, Textile Colors Division; **Francis A. E. Spitzer**, to vice-president, International Division; and **Kenneth B. Lane**, to secretary and legal staff head; all of Interchemical Corp.

KUDOS

To **Farrington Daniels**, chairman, chemistry dept., University of Wisconsin, the 1957 Priestley medal of the American Chemical Society.

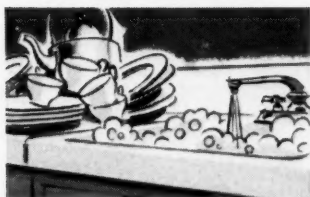
THESE SUNOCO PETROCHEMICALS CAN HELP YOU GET HIGH-QUALITY END PRODUCTS



POLYURETHANE FOAMS

BENZENE

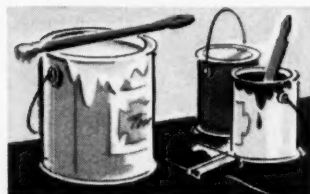
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Mol % purity of 99.8 assures greater yields. Sunoco Toluene is paraffin- and thiophene-free.



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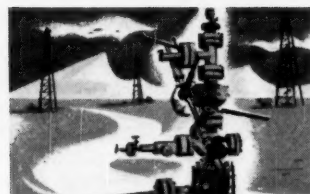
Lower than usual acid-wash color gives higher product quality.

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SUNAPTIC ACIDS

High molecular weight, low unsaponifiables and no olefinic unsaturation allow possible substitution for fatty, naphthenic and synthetic acids. Very efficient in corrosion inhibitors.



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PDO-40 (Petroleum Drying Oil)

Excellent film-forming ability of this high-grade petroleum resin makes it highly resistant to water, alkalis and dilute acids.



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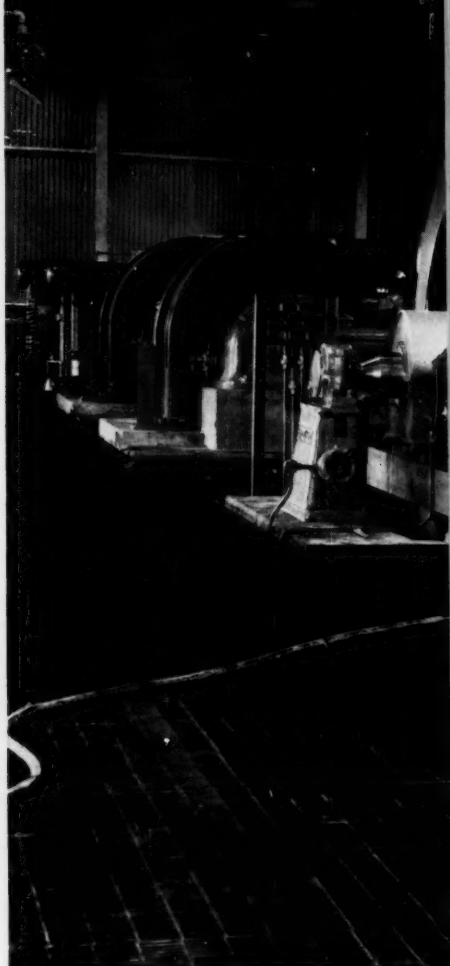
ENGINEERING REPORTS:



EASY EXPANSION was provided during planning stages of SOHIO system. For example, each of two 11,500-kva power transformers on General Electric package substation, providing 4160 v for plant distribution, can be uprated to 14,394 kva.



DESIGNED for outdoor process use, two General Electric totally enclosed, inert-gas-filled induction motors, with gas to water heat exchangers, drive centrifugal blowers. Total connected load of the plant's motors approximates 25,000 hp.



Here's how system

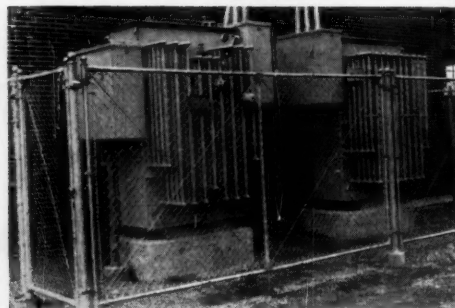


OVER CURRENT and short circuit protection is provided for 175 through 1000-hp motors by 4160-v Limitamp* controllers.

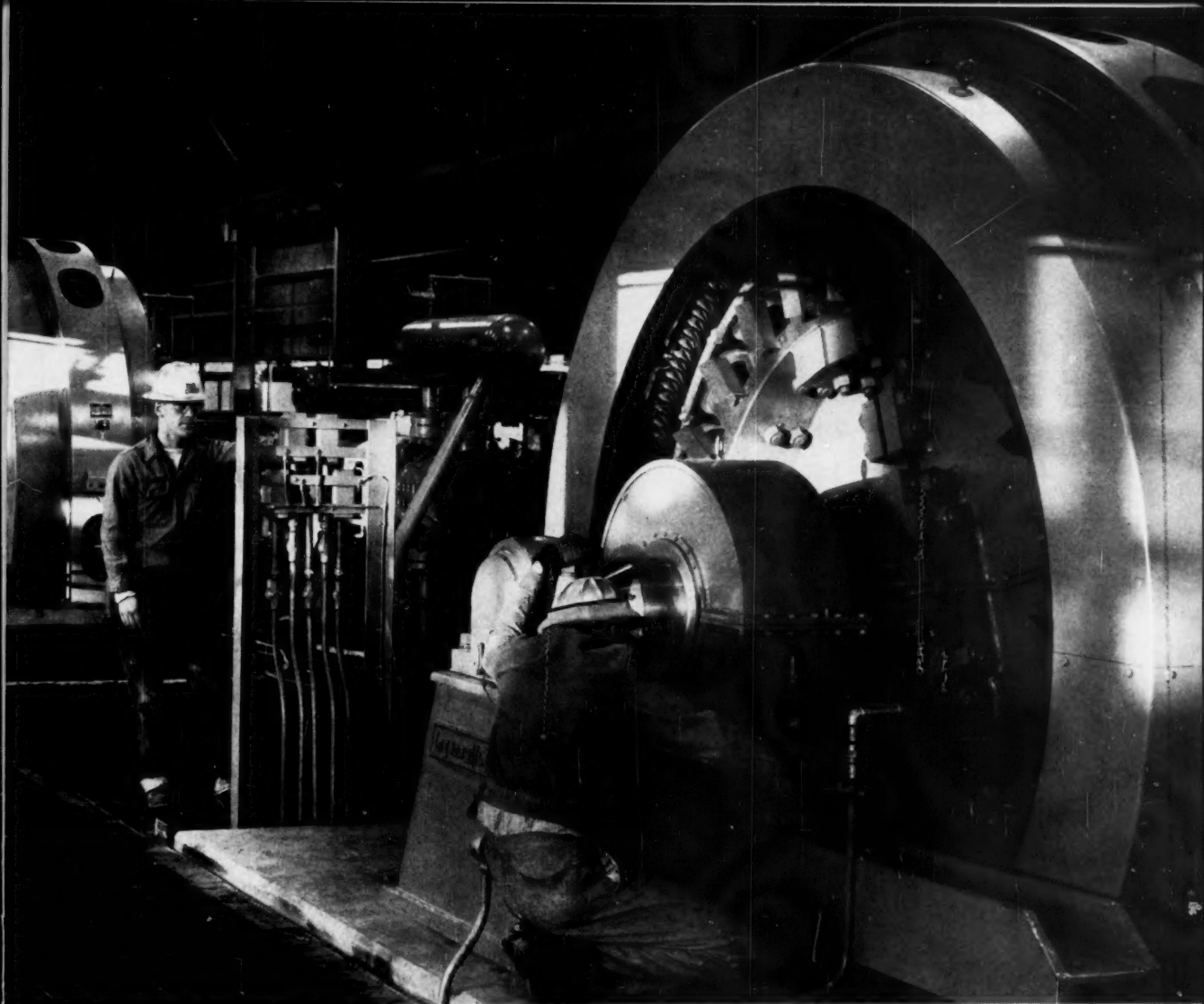


COST SAVING load center system brings higher voltages closer to load. Low voltage switchgear controls auxiliary motors.

*Reg. trade-mark of General Electric



SYSTEM PROTECTION through neutral grounding covers all voltage levels, including 1000-kva medium transformers.



PRESSURIZED HOUSING encloses sliprings of two 3000-hp General Electric synchronous motors driving synthesis gas compressors. Secondary selective system helps permit almost all motors in the system to have a standby power source.

SOHIO Chemical's engineered electrical helps prevent lost production

General Electric engineered system at new Lima, Ohio, petrochemical plant was planned for reliability, future expansion.

The SOHIO Chemical Company operates their new \$17,000,000 petrochemical plant with a General Electric engineered electrical system planned and installed to meet present and future electrical requirements. This modern plant, designed to produce 300 tons of anhydrous ammonia per day, was engineered and constructed by The M. W. Kellogg Co., New York.

2 BASIC REQUIREMENTS were set forth by SOHIO . . .
 (1) reliability to help guard against lost production and
 (2) flexibility for future expansion. General Electric engineers worked closely with SOHIO personnel and

their consultants to gain these objectives. On these pages are some highlights of the system.

WHEN YOU BUILD, or modernize, take advantage of General Electric quality-engineered electrical equipment and complete engineering services for the chemical industry. Your General Electric Apparatus Sales Representatives at the nearest G-E Apparatus Sales Office will give you complete information. Contact him early in your planning and write for bulletin GED-2244 "Engineering Services" to General Electric Co., Section 681-13, Schenectady, New York.

Engineered Electrical Systems for the Chemical Industry

GENERAL  ELECTRIC



Improved product and pricing are earning foilwalls a new chance with bag users.



FILLING: Packing speed—no handicap—equals that of conventional multiwalls.

Better Outlook for Foilwall Bags

Multiwall bags, with a ply of aluminum foil laminated to kraft paper, are about to enter the chemical packaging market. Hudson Pulp & Paper Corp. will soon introduce such bags in a variety of models.

In standard form, the multiwall will have a 0.00035-in. foil between the inner and outer plies. Other constructions—such as polyethylene extruded on foil, foil laminated with polyethylene to kraft, and bags with the foil in various ply positions—will also be available.

The new multiwalls, claims Hudson, will be highly resistant to moisture and gas penetration, gusset cracking, grease deterioration and chemical corrosion. Here's what tests show so far:

- **Moisture.** Test charges of calcium chloride in standard-type polyethylene-coated multiwalls gained 2.5 times as much water over a 14-day period as did samples packaged in foil bags.
 - **Corrosion.** Bags with an inner ply of 15-lb. polyethylene on 50-lb. kraft, an outer ply with 20-lb. polyethylene and a second ply of 0.00035-foil laminated to 40-lb. kraft hold shipments of flake caustic soda. Sodium bisulfate, acidic and hygroscopic, can be handled by the same bag with only a 15-lb. polyethylene extrusion needed on the outer ply.
 - **Gas barrier.** Chemicals with high vapor pressures, such as *p*-dichlorobenzene and benzene hexachloride, have been test-shipped successfully with a 0.00035-foil laminated to 40-lb. kraft in the former case, and in the latter, with a 1.5-mil polyethylene extrusion on 0.0005-in. foil laminated to 40-lb. kraft.
 - **Creasing.** Hudson's crease tests indicate that standard polyethylene-to-kraft ply material will pass 3 times more water than will the standard foil-to-kraft ply.
- With those characteristics, foil multiwalls could well find big outlets in packaging hygroscopic and deliquescent materials, moist pastes (e.g., pigments), corrosive and efflorescent chemicals. The new bags, says Hudson, can

HERE'S YOUR 1957 WINTHROP PRICE LIST!

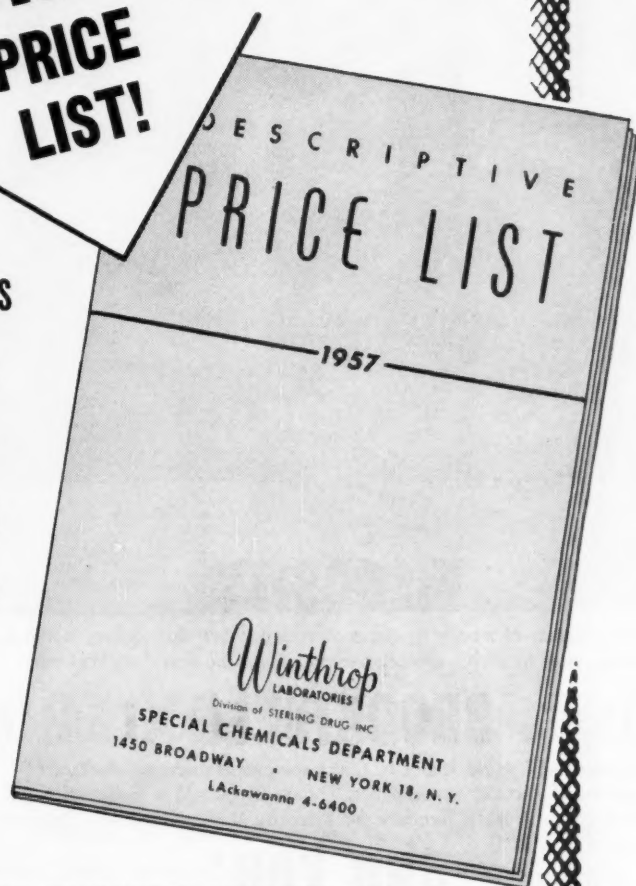
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VISCOSITY*

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SALES

be filled at regular rates and will be highly competitive in other ways.

Standard foilwalls will sell about 10% higher than standard polyethylene-coated bags. More elaborate types of construction—polyethylene on foil laminated to kraft, for example—will of course be more expensive, but still competitive, Hudson asserts, when viewed against its properties and the form of packaging it replaces. Metal and fiber drum markets are Hudson's target.

Familiar Arguments: Naturally, Hudson will buttress its sales pitch for the foilwalls with the arguments every multiwall salesman knows—and uses—against competitive packaging products. These take the general form of elaborate statistics that attempt to show that steel and fiber drums require much more storage space than empty multiwalls, hence incur much higher storage costs; that the tare of bags is much less than the tare of drums; that empty bags can be more economically moved than drums. Drum makers can be expected to fight foilwall inroads by claiming such advantages as high container strength, resistance to transit damage, and reusability.

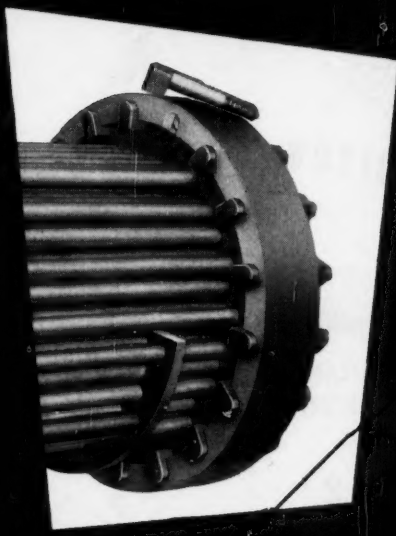
Hudson will be the only foilwall producer when it brings the new product out. Foilwall bags have been offered sporadically in the past. But, because of high price and gusset-cracking upon creasing, they were not notably successful.

Hudson plans to make its foilwall manufacturing how-how* available to other bag makers in several months. This would stimulate market development by eliminating purchasing agents' objections to a single source of supply. Other companies are expected to be in foilwall production within 6 months. And, there's a possibility that, should a market develop, Hudson would sell foil-paper laminates.

At present, Interstate Commerce Commission approval has not yet been received. Such authorization is necessary for use with chemicals that are toxic, corrosive or generally hazardous.

Several chemical companies, however, are conducting the test shipments that are necessary for ICC approval. When the final results come in, foilwalls will very likely be in a good position to carve a niche in the chemical packaging field.

*On a license basis if patents materialize.



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The patented Ell Bolt construction employed on Vogt floating head heat exchangers is the answer to re-assembly without distortion or leak development.

Cover may be removed by simply loosening the Ell Bolt nuts and disengaging the Ell Bolt heads from the "lock notches." No misplacing of Ell Bolts can result — and tightening is easy and positive — absolutely leak proof. Send for: Bulletin HE-6. Address Dept. 24A-XCW



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HEAT TRANSFER EQUIPMENT

As UN Social and Economic Council ponders hazardous-chemicals labeling recommendations, U. S. delegate John Baker urges ILO and UN to work out single, uniform system.



Making the Case for Global Safety Labels

A report possessing considerable potential impact on chemical exporters was delivered in New York last week to the Transport and Communications Commission of the United Nations' Economic and Social Council.

At the same time, U.S. delegate to the ESC, John Baker, made a strong plea for label uniformity as he put forth resolutions aimed at getting agreement between international agencies studying the problem.

Prepared by a "Committee of Experts on the Transport of Dangerous Goods," the report embraced the results of three years of work toward a set of rules for safe shipment of hazardous chemicals across national boundaries.

The report lists chemicals and gases, each classified on the basis of the character of risk involved in its shipment (explosive, corrosive, infectious, inflammable, etc.), and includes a set of labels (*see cut*) identifying the risk. It also outlines a set of

simplified shipping papers covering dangerous goods.

The proposals do not suggest a world code. Rather, the object is to present to member governments, and to carriers and manufacturers, the bare bones of a regulatory system that can serve as the basis for national regulations.

By providing such a framework, the UN commission is taking a first step toward at least a minimum degree of uniformity in the rules. The list, for instance, covers only the "principal dangerous goods" that individual countries should include in their lists.

The UN Transport and Communications Commission took note of the committee's report, the equivalent of bringing the suggestions to the attention of member governments. Regulatory action must come from member governments rather than the UN itself.

With this out of the way, the commission will get around to a problem that threatens to blow up the entire

effort toward uniformity in regulating transport of dangerous goods: the roughly parallel attempt at formulating a similar system by another world agency, The International Labour Organization (ILO).

ILO's proposals, slated to come up for action by the governing body in March—conflict at a number of points with those of the UN committee. The most publicized, but, according to the experts, least significant, is the difference in labels proposed for identifying corrosive substances (*CW*, Mar. 19, '55, p. 62).

The ILO and UN Committees agree on the design of labels for other risks. But two meetings between the groups last August on the disputed corrosion label failed to bring even an approach toward agreement. The UN group expressed the concern of chemical shippers that the ILO's withered-hand symbol might induce lawsuits.

Bogged down over the corrosion label issue, the meetings failed to settle

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NITROETHANE
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2-NITROPROPANE
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2-AMINO-2-METHYL-1-PROPANOL
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TRIS (HYDROXYMETHYL) AMINOMETHANE
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HYDROXYLAMMONIUM ACID SULFATE
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differences. But, each system is apt to find adherents—a far cry from the avowed objective of both groups: worldwide uniformity.

Failure to adopt a uniform system would blast ILO's hopes of furthering its long-range objective—the protection of workers in all functions of industry: ILO plans to follow up its shipping proposals with safety suggestions for warehousing and manufacturing dangerous goods. The governing body of ILO will consider the shipping safety proposals of its experts in March.

More Confusion?: For U.S. producers and shippers, the need for ending the present split takes on added urgency from the fact that a number of intergovernmental agencies—such as the Economic Commission for Europe—are planning new regulatory codes to apply to shipments of dangerous goods within their borders.

Now, relatively few industrialized countries outside of the U.S. have given much attention to safety regulations for shipping dangerous products. But, with trade steadily increasing, pressure to fill this gap is growing in many countries.

Code Numbers: In their final report, the U.N. experts urge continued efforts to evolve a system giving each dangerous substance a classification code number. A universally recognized code number, the experts say, will end confusion in nomenclature, make international uniformity workable.

The report also proposes that the commission retain other experts to develop dangerous-substance packaging standards that could later be added to the recommended uniform guide for classifying, listing, labeling and invoicing dangerous substances.

And, to cap off their report, the committee recommends establishment of a permanent U.N. group to monitor newly introduced chemicals and other products for inclusion in regulations of member governments and transport organizations.

These proposals, however, will take a back seat to the more acute need for getting the ILO and the U.N. commission into agreement. At the commission meeting this week, U.S. delegate John Baker—at the unanimous urging of federal agencies and trade associations—put forth two resolutions:

- Request the U.N. Secretary

General to seek an agreement with ILO's leaders on directing the two groups to produce a single plan before recommending any safety standards;

- Reappoint the U.N. committee of experts.

Big If: If the two groups decide to try for agreement, the next stage will involve an effort by the U.N. and ILO to come up with a uniform world-wide system that will not conflict with the present U.S. transport regulations on foreign trade.

Here, the major areas to watch are the proposed lists of dangerous goods and, more particularly, the risk-classification assigned. Labeling, except for the corrosives label, is not expected to be a trouble-spot. Already, the Interstate Commerce Commission has informally advised the State Dept. that it will go along with the U.N.-ILO labels for U.S. exports; they will be marked by picture symbols in black-and-white, as a substitute for current labels.

If U.S. exporters fail to get the two world agencies to recommend rules conforming to their own, they run the risk of losing valued export markets.

This could result if Europe, through its regional organization, were to adopt a softer (than ICC's regs.) set of rules for intra-European shipments. That would hurt U.S. exporters, forced to abide by the more stringent ICC rules, in the European market.

Purchasing Prospects

Chemical process industry buyers will get the new year off to an ambitious start by probing the future of purchasing at the annual midwinter meetings of the Chemical & Allied Products Group of the National Assn. of Purchasing Agents. To be held at Chicago's Congress Hotel on January 24th and at New York's Hotel Commodore on January 29th, the sessions will take the theme, "Forward Look in Chemical Buying."

Program highlights:

- Economic outlook for 1957 and the long-term outlook (Chicago—E. Gunther, director of market research, *Fortune* magazine; New York—A. H. Johnson, director of research, J. Walter Thompson Co.).

- Automation in chemical procurement—panel discussion (purchasing agents and representatives from business-machine makers).

- Economics in transportation of chemicals (John S. Carlson, director



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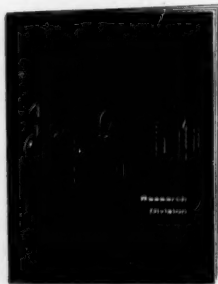
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SALES

of transportation, Stauffer Chemical Co.).

- Profit from the utilization of vendors' services—panel discussion (buyers from fine chemical, bulk chemical and pharmaceutical industries).

- Legal pitfalls awaiting chemical buyers (C. S. Maddock, director, legal department, Hercules Powder Co.).

Luncheon talks on the importance of the chemical industry in the national economy will round out the sessions. In Chicago, Amoco's marketing vice-president, John J. O'Connell, will be the speaker; in New York, it will be Maurice F. Crass of the Manufacturing Chemists Assn.

DATA DIGEST

- **Polyvinyl Acetate:** 4-p. bulletin provides information on shipping, storage, pipe, valves and pumps for the handling of polyvinyl acetate emulsions. Colton Chemical Co. (Cleveland).

- **Nickel:** Book presents the supply-demand outlook for nickel in 1957, analyzes nickel consumption and prices, gives directory of nickel producers and plating-supply houses. Herman B. Director Associates (Washington, D.C.). \$10.

- **Petroleum Dyes:** 16-p. brochure describes properties of dyes used for petroleum coloring. E. I. Du Pont de Nemours, Petroleum Chemicals Division (Wilmington, Del.).

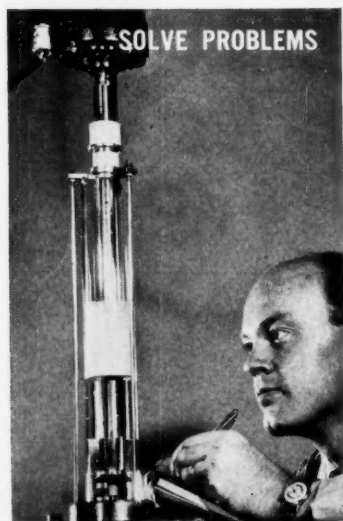
- **Refractories:** Bulletin describes properties and uses of line of castable refractories. Refractory & Insulation Corp. (New York).

- **Films:** Catalog gives titles and brief description of industrial motion pictures on plastics. Society of the Plastics Industry (New York).

- **Weighing Systems:** Bulletin outlines different arrangements of tank and bin weighing systems. Recently developed weighing system "package," which includes a selection of instrumentation of eight different manufacturers is also included. A. H. Emery Co. (New Canaan, Conn.).

- **Guar Gums:** 16-page booklet describe line of guar gums. Information on Food & Drug Administration standards concerning the gum, as well as methods of handling, types available, and applications are provided. Stein, Hall (New York).

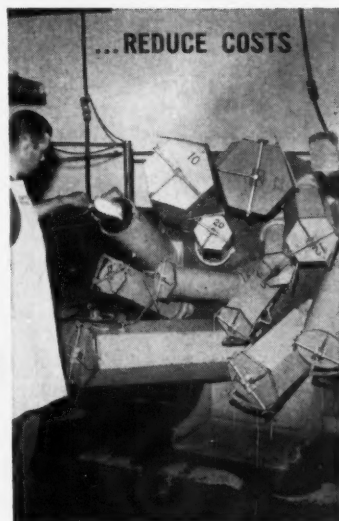
HOW **HERCULES** HELPS...



SCHOLARSHIP WINNERS—Six national winners in the 4-H Entomology Program are pictured with Hercules Vice President Paul Mayfield. Hercules sponsors this program each year to promote a better understanding of insect life and its relation to health and national wealth. Awards include 6 college scholarships, state and county prizes.

FOAM CONTROL is important in many industries, including paper making. To assist in solving problems, Hercules developed this foam tester, which can be used in mills to determine which of the many Hercules defoamers best fits the exact requirements of the mill.

TUMBLING COMPOUNDS play a key role in precision barrel finishing of metal parts. Metal cleaners based on Hercules® CMC are used in tumbling compounds to improve quality and lower cost. This is just one example of the usefulness of CMC—the versatile film-former, suspending agent, water binder and viscosity control agent.



HERCULES

CHEMICAL MATERIALS FOR INDUSTRY

HERCULES POWDER COMPANY

INCORPORATED

992 Market St., Wilmington 99, Del.



057-1

SYNTHETIC RESINS, CELLULOSE PRODUCTS, CHEMICAL COTTON, TERPENE CHEMICALS, ROSIN AND ROSIN DERIVATIVES, CHLORINATED PRODUCTS, OXYCHEMICALS, EXPLOSIVES, AND OTHER CHEMICAL PROCESSING MATERIALS

Know enough about Persulfates? **BECCO[®]** can brief you on them



Keeping the nation on wheels. That's the job of the rubber industry. Persulfates, of which Becco is principal supplier, are utilized as reagents in the production of vulcanization accelerators used to "cook" rubber into tough, long-wearing tires.

BECCO Peroxygen Chemicals: Hydrogen Peroxide • Peracetic Acid • Sodium Perborate • Persulfates and others

Persulfates, perhaps the least known of peroxygen chemicals, have unique properties which make them useful in processes involving polymerization and depolymerization, organic synthesis and others. This class of peroxygen compounds has applications in such diverse fields as textiles, soap, rubber, adhesives and others in which unique properties expedite processing.

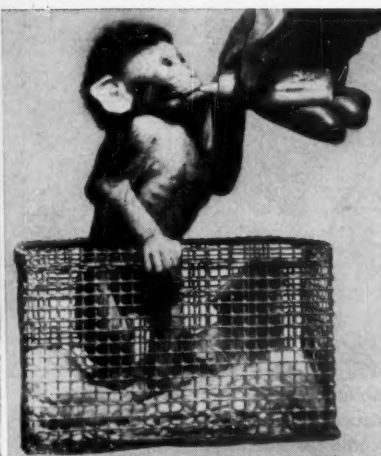
It is possible you have problems in which persulfates may be helpful. We suggest that you write for Becco Bulletins No. 34 and

68, which are bibliographies on the uses of persulfates. They contain 184 references in nineteen specific and a number of miscellaneous fields, including cellulose chemistry, fur bleaching and carroting, photographic chemistry, starch processing, metal surface treatment, etc.

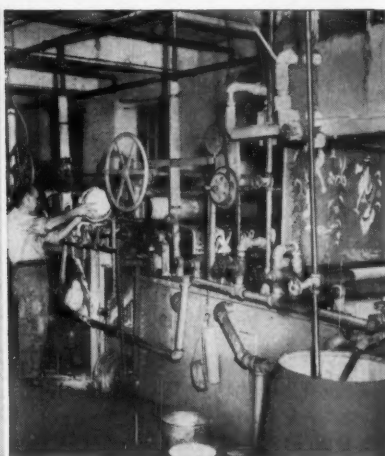
Also, your technically trained Becco representative can discuss your problems from a specific and practical standpoint. Becco Ammonium and Potassium Persulfates are two among many peroxygen chemicals of which Becco is a leading producer.



Home Runs in the making. After a lengthy drying out process, bats are roughed to size, then turned on lathes before sanding and trimming. They are then bleached with hydrogen peroxide for uniform surface appearance before staining and finishing.



Germfree monkey in a germfree cage gets a germfree lunch from a germfree hand at Lobund Institute, University of Notre Dame. Sterile conditions from birth permit the study of the effects of single germ types. Becco Peracetic Acid has been found useful in some phases of this germfree research.



Printed fabrics pass through a solution containing sodium perborate. The original color is restored and the colors oxidized or fixed. Soaping, rinsing, washing and drying follow in this machine. A similar machine is used for washing after bleaching.

BECCO CHEMICAL DIVISION

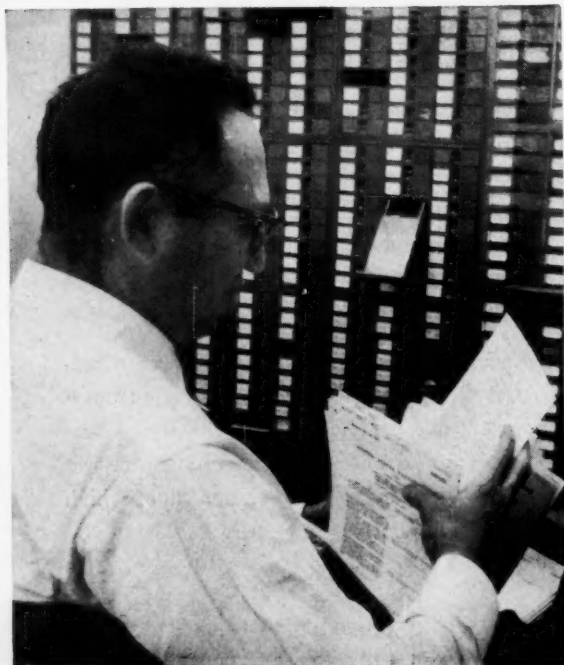
Food Machinery and Chemical Corporation • Station B, Buffalo 7, New York

BOSTON • BUFFALO • CHARLOTTE, N. C. • CHICAGO • NEW YORK • PHILADELPHIA • VANCOUVER, WASH.



FMC CHEMICALS INCLUDE: BECCO Peroxygen Chemicals • WESTVACO Phosphates, Barium and Magnesium Chemicals • WESTVACO Alkalies, Chlorinated Chemicals and Carbon Bisulfide • NIAGARA Insecticides, Fungicides and Industrial Sulphur • OHIO-APEX Plasticizers and Chemicals • FAIRFIELD Pesticide Compounds and Organic Chemicals

RESEARCH



Manual: Search takes hours, is tedious task for professional staffer.



Machine: Search time is reduced to a matter of a few minutes.

Ushering in New Look in Patent Searching

Plodding, manual patent searches are giving ground this week to the machine age. At the U.S. Patent Office in Washington, automation—which includes both punch-card (shown above) and computer techniques—is being tried on 350 steroid patents. If tests are successful, speedier, more thorough and more accurate patent searches are in the offing.

Already, the Patent Office can point to sizeable time savings resulting from mechanization. Manual searching of the 350 patents takes a skilled examiner 4-6 hours (to determine whether disclosures in a steroid patent application haven't already been patented). The punch-card system cuts this time to 2-3 minutes—including machine set-up time. Computer cuts this to a fraction of a second.

Spearheading the investigation are the Patent Office's research and development director Don Andrews and deputy director Benjamin Lanham. To code their computer (and also the punch-card machine), An-

drews and Lanham depend on topology, which, in Andrew's words, means: "Looking at each element of a compound in turn to see what its neighbors are." For the steroids, they've examined chemical groups and their location in each compound, done the same for chemical bonds. This data is coded.

In the present computer system, the coded data is transcribed on magnetic tape. Examiners, seeking to determine whether a particular compound (or fragment) or function of a compound mentioned in a patent application exists in issued patents, "ask" the computer to search its "memory." Relevant patents are identified by the machine. At present, the Patent Office is using the Bureau of Standards' SEAC computer on an allotted-time basis for this work.

In its punch-card method, the Patent Office is using another code (also based on the structure of a compound) to identify the steroid patents. It is now using a Bureau of Census ma-

chine, hopes soon to have a special version of IBM's type 101 machine available.

There's a good reason for trying both approaches to mechanical patent searching. Computers are fast, but can cost more than \$1 million. Card-searching machines, on the other hand, are relatively cheap—around \$10,000—but not fast enough to justify their cost in searching patent classifications where many thousands of patents are involved. There's a good possibility, Andrews and Lanham admit, that the ultimate patent-searching machine hasn't yet been devised.

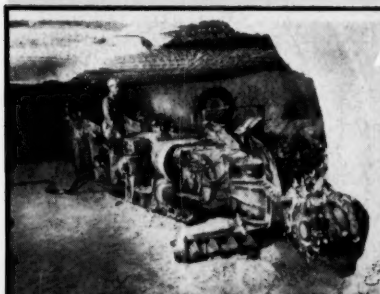
More to Come: But chemical firms and inventors, beset by delays in getting their patents issued, will probably welcome mechanization in any form. After the steroids, the Patent Office will evaluate mechanization for pharmaceutical patents. After that, the entire chemical patent field will, if feasible, be set up on a mechanized basis.

Preliminary work is proceeding in nonchemical fields, too. But because

THERE'S ONLY **1** BASIC PRODUCER OF

caustic potash

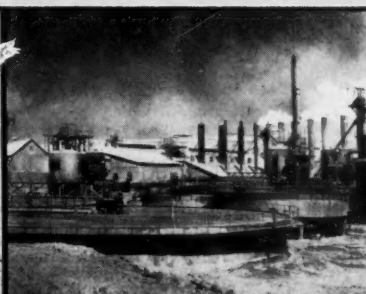
INTERNATIONAL MINERALS & CHEMICAL CORPORATION



MINES

at Carlsbad

— the raw material
(sylvite ore)



REFINES

at Carlsbad

— potassium chloride



MANUFACTURES

at Niagara Falls

— caustic potash



What's the advantage to you in buying from a basic producer? Greater security of supply. Consistently uniform quality. High purities. Prompt shipments on schedule.

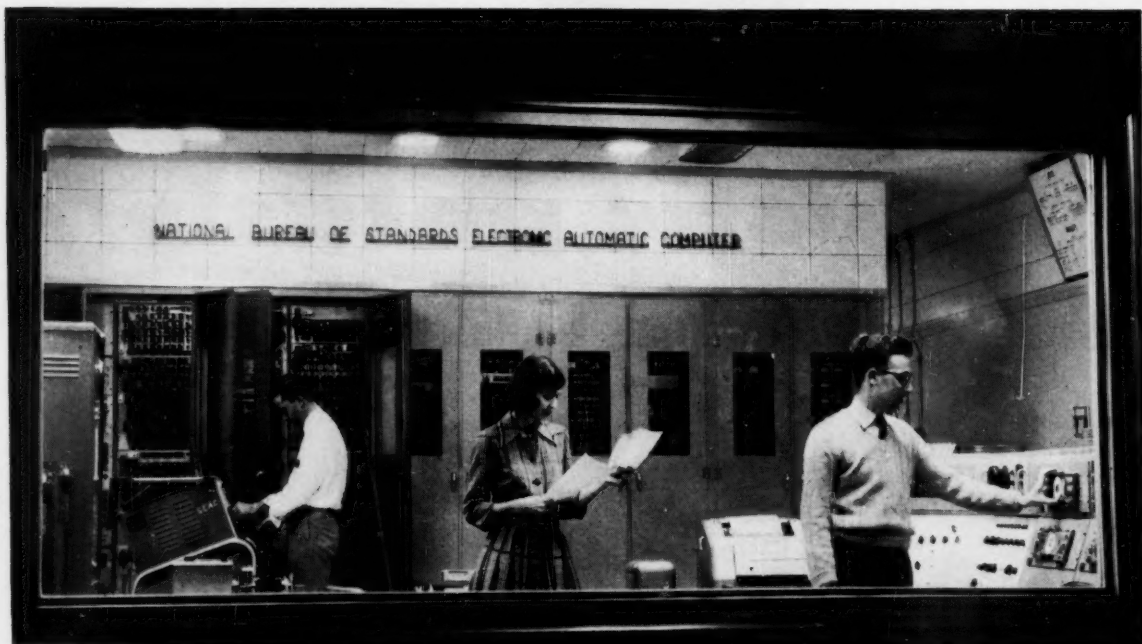
International, alone among suppliers of Caustic Potash, is a *basic producer*, controlling production from ore bed to finished product. From sylvite ore mined at the 900 ft. level, the Carlsbad refinery produces electrolytic grade KCl . This 99.95+ % pure material is shipped to the Niagara Falls plant for the manufacture of KOH and other potash salts.

CAUSTIC POTASH
CARBONATE OF POTASH
POTASSIUM CHLORIDE
SULFATE OF POTASH
HYDROFLUOSILICIC ACID
MAGNESIUM OXIDE
LIQUID CHLORINE
MURIATIC ACID

potash division



INTERNATIONAL MINERALS & CHEMICAL CORPORATION • GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6
485 LEXINGTON AVENUE, NEW YORK 17 • MIDLAND, TEXAS • FULTON NATIONAL BANK BLDG., ATLANTA, GA.



ELECTRONIC COMPUTERS (above and below), or a yet-to-be-designed computer-type instrument, offer most promise.



chemists have developed a rigorous and consistent identification of compounds, chemical patents are getting first choice. In all fields, the first task of mechanical patent searching will be to work off the huge (200,000) current backlog of patent applications.

The Chemical Stake: Chemical firms

stand to benefit a lot from speedier patent searches, including a reduction to a few weeks of the 8-12 months it now takes before a patent application is searched. Accelerated patent searching undoubtedly will result in more chemical research. Many firms, after applying for a patent, now hold up

further extensive research and pilot plant operations until they're sure where they stand in the field. The sooner they can find out, the sooner they can step up their studies, or shift research to a new area.

They'll get their patents faster, too. It now takes about 3½ years to obtain a patent. Applications containing unacceptable points are returned to the applicant for revision (and re-submission within a six month period). On re-arrival at the Patent Office, the application returns to the bottom of the examiner's list. Most patents "bounce" three or four times before final action. Speedier patent searches should cut waiting time, permit granting a patent in months instead of years.

Less time in searching will give examiners more time for critical analysis of the application to decide which claims are valid. At present, an examiner spends roughly 60% of his time in reading technical and patent literature (prior art), the remainder on analysis. In the chemical field, examiners often must spend as much time searching the technical literature as they do searching the patent literature.

To help meet this problem, the latest Vannevar Bush report on revising and modernizing patent procedures (*CW*, Jan. 12, p. 32) recommends that

NEW OPPORTUNITIES!

Amazing Fabric Softener— **ARQUAD 2HT**

*now available to meet
growing demand*

You can get in on tremendous new profits in these tremendous markets—households, hotels, hospitals, laundries. All because the demand for Arquad 2HT can now be met by the new McCook plant.

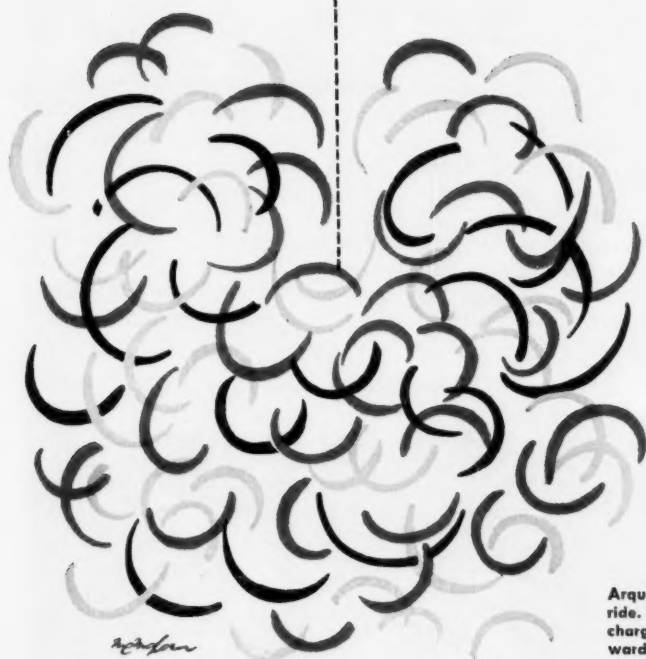
Fabric softeners based on Arquad 2HT compete with nothing you're now making. No soap, no detergent, no water softener can do what Arquad 2HT does!

Softens all fabrics • takes scratchiness out of starched shirts • makes towels twice as fluffy • helps fabrics resist dirt • makes clothes dry faster • makes ironing easier.

Softeners based on Arquad 2HT are easy to manufacture, easy to sell, easy to use—and the market has hardly been scratched!

Send for a free sample of Arquad 2HT and information on formulation. Test it yourself. When you see what it does—you'll sell yourself that "here's a product that's going places!"

Arquad 2HT is distearyl dimethyl ammonium chloride. When it attaches itself to fibers, the polar or charged end of the cation tends to orient itself toward the fiber, leaving the 2 fatty tails exposed to contribute their softening characteristics to the goods.



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1355 West 31st Street, Chicago 9, Illinois

CW1

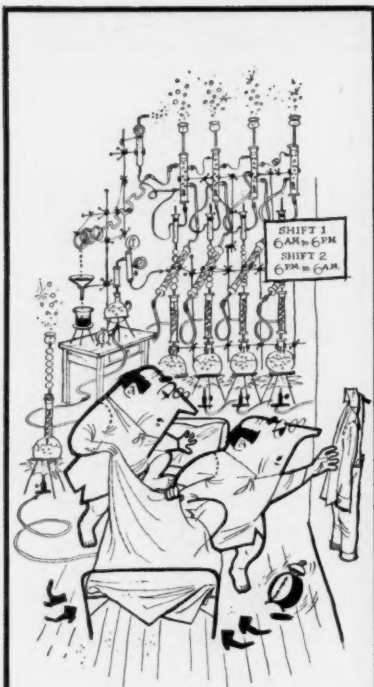
- ☐ Send me a sample of Arquad 2HT.
☐ Send me the Arquad 2HT Bulletin on Textile Softening.
☐ Send me the Arquad Brochure.

NAME _____ TITLE _____

FIRM _____

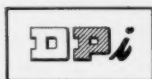
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**It's better
to get it from
Eastman . . .**

Sure, when you need an uncommon organic (or an uncommonly pure one) in more-than-test-tube and less-than-tank-car quantities, try Eastman Organic Chemicals Department, Distillation Products Industries, Rochester 3, N. Y.



there are some 3500
Eastman Organic Chemicals
for science and industry

DISTILLATION PRODUCTS INDUSTRIES
is a division of
EASTMAN KODAK COMPANY

© EASTMAN KODAK COMPANY, 1957

RESEARCH

mechanized equipment also be used to handle trade and technical journal literature. But this is still a long way from accomplishment.

More thorough searches will be possible with automation. At present, the examiner's time is limited, precludes his performing an extensive search in so-called minority classifications, or to look into every subclassification. (Since 1790, more than 3 million patents have been granted. These are filed in 55,000 subclassifications.)

Thorough searching will minimize over-ruling of granted patents and the resultant hardship where an investment in plant and equipment has been made on the strength of the patent.

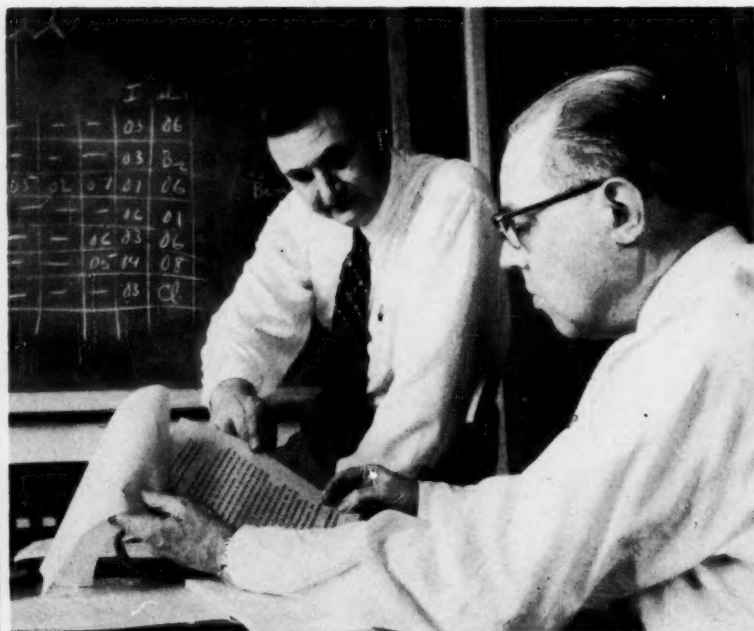
Mechanization should reduce the human error in patent searching too, eliminate the fatigue that contributes to such errors.

In the future, the automated facilities may be made available to the public to do its own searching before submitting a patent application. Many firms prefer to file an application (at a cost of about \$300) rather than make a preliminary search. This often happens when the patent is in a field unfamiliar to the company, costs less than letting the firm's own specialists take on the job.

Freedom to use the government's automated patent-searching equipment—along with its library of coded prior art—would signal a new era for inventors. Patent applications would become models of brevity. And applicants could search as fast as professional examiners. Despite the speed with which future patents may be processed, however, there's little likelihood that patent attorneys will vanish. Says one such lawyer, "Rather than having less work to do, I envision making broader searches—for the same fee."

Second Try: The Patent Office has been thinking about mechanization for a long time, first took it under consideration in 1946. Four years later, a punch-card system was worked out that showed promise, but the project was halted, presumably for lack of funds. In 1954 the project was revived, led to formation of the Patent Office's research and development division last spring. The division's staffers are trained in computers, coding, and other related subjects.

Armed with talent and sufficient funds, there's every likelihood the Patent Office will come up with the optimum method of mechanical searching. That day, chemical firms concur, can't come too soon.



ANDREWS and LANHAM: Topology is the secret of their code.

FORMALDEHYDE

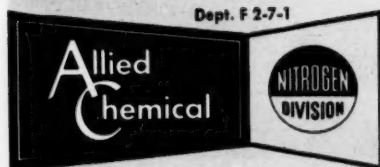
all you can use...
all the
time



Reforming of natural gas in this unit is first step in Allied Formaldehyde production. Carbon monoxide and hydrogen from reformer are reacted to produce methanol. Methanol is then oxidized to produce Formaldehyde.

If your production depends on Formaldehyde, you can depend on ALLIED for uninterrupted supply. At South Point, Ohio, a completely integrated plant makes methanol from natural gas, then processes this material into Formaldehyde. You can always get all you want when you specify Allied.

Allied Formaldehyde, in a wide range of concentrations, is shipped in tank cars and tank trucks from South Point, Ohio, and from customer-convenient bulk terminals.



40 Rector Street, New York 6, N. Y.

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Solutions • Nitrogen Tetroxide • Fertilizers & Feed Supplements



Chester Schink wears two coats as chief administrator (left) and research chemist (below) of Krishell Laboratories. Base of the firm's growing pyramid of rare chemicals is a supply of raw materials indigenous to the Pacific Northwest.

Right at Home Researching Rare Chemicals

Mountain streams, the Pacific surf, and Oregon's bountiful countryside signify something more than recreation to the staffers of Krishell Laboratories, Inc. (Portland). They're the sources of raw materials that are the key to the firm's steady growth in research and production of rare chemicals. As Krishell marks its ninth anniversary this month, it numbers among its stock items such oddities as glucosamine (from crab shells), glycogen (oysters), protamine (salmon milt) and lupolon (Oregon hops).

Mainstay of the small but unusual enterprise is native Oregonian, Chester Schink, one-time DuPont



NEW PRODUCT DIRECTIONS



in plastics today... amazing heat and abrasion resistance with

CYANAMID'S TRIALLYL CYANURATE

HT-CR-39, an optically clear plastic sheet made with triallyl cyanurate, is demonstrated above by Mr. William Chapman, president of Cast Optics Corporation, Hackensack, N. J., a major manufacturer of cast sheet plastics. Sparks of molten metal bounce harmlessly off this plastic, inches from Mr. Chapman's face, leaving the surface unmarred. Plate glass in the same position is quickly fouled with metal

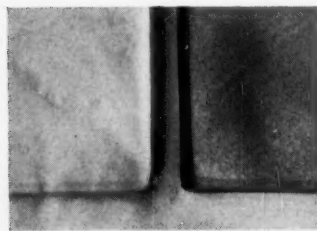
deposits. (See photo below.)

With Cyanamid's triallyl cyanurate, HT-CR-39 remains flat and rigid at 230° F; gains 25 to 30% in strength; is 35 to 45% more abrasion resistant than the acrylics.

TAC is the chemical key to tougher, more heat-resistant plastics. It combines the functionality of three allylic groups with the exceptional stability of the tri-

azine nucleus. TAC imparts to resins high resistance to heat distortion, high temperature, electrical break down, fire, chemicals and solvents.

Glass laminates, clear and filled castings and moldings have been developed that retain room temperature properties at 500° F for prolonged periods. What further advances may yet be made? The answers are up to you. Try TAC.



Molten sparks leave plastic unmarred (left); fuse to glass (right).



CYANAMID

AMERICAN CYANAMID COMPANY
30 Rockefeller Plaza, New York 20, N. Y.

Please send me

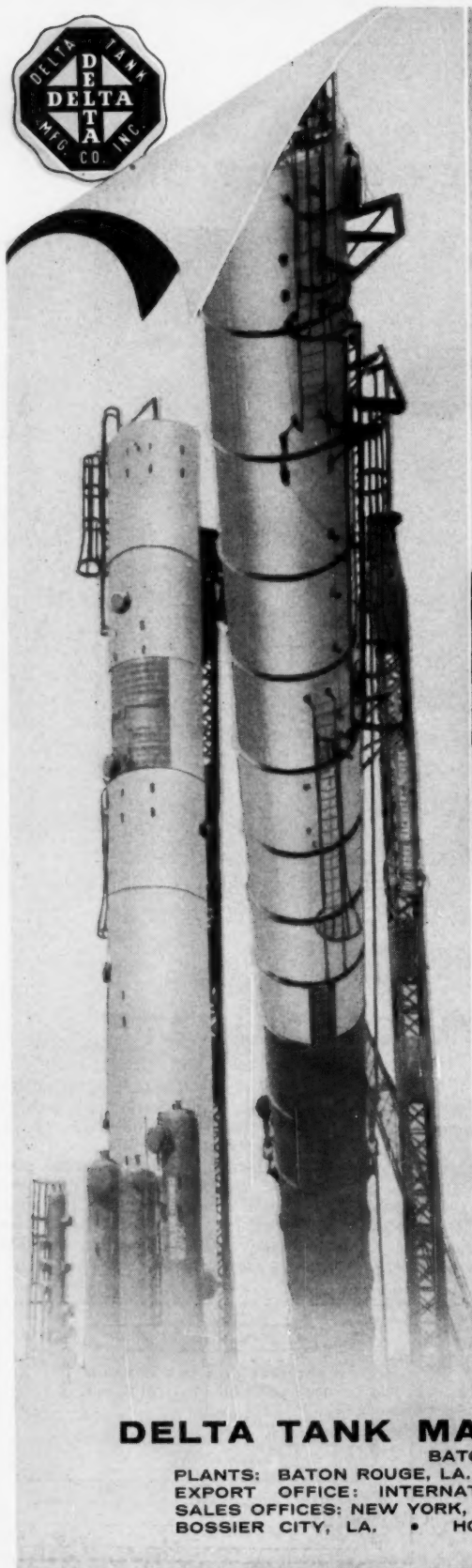
- ☐ Bulletin on Triallyl Cyanurate
☐ Sample of TAC

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



You should see what's inside!



If it were possible to see inside, the engineering skill and fabricating experience involved would be apparent. This 186-foot, 396,000-lb. tower is one of seven fabricated by Delta Tank for the American Cyanamid Company.

Delta's modern facilities are geared to produce the type of pressure equipment needed by the chemical, petro-chemical and petroleum industries. Delta's Baton Rouge plant is located right in the heart of the great new Gulf petro-chemical area.

Complete information on Delta's facilities, or your specific equipment needs, is available at your request.

DELTA TANK MANUFACTURING CO., INC.

BATON ROUGE, LOUISIANA

PLANTS: BATON ROUGE, LA. • MACON, GA. • BEARDSTOWN, ILL.
EXPORT OFFICE: INTERNATIONAL TRADE MART, NEW ORLEANS, LA.
SALES OFFICES: NEW YORK, N. Y. • WESTWEGO, LA. • LAFAYETTE, LA.
BOSSIER CITY, LA. • HOUSTON, TEXAS • WHITTIER, CALIFORNIA

"Basement labs are a discouraging element."

chemist who joined Krishell in 1951 because—as he puts it—"I wanted to come home." Top man of seven employees, Schink is general manager and research director, among other functions. During his tenure with the firm, rare-chemical sales have registered about a 10% increase/year.

Right now, the largest volume item in the firm's chemical line is adenine. But relatively large quantities of about 50 purines (e.g., xanthine, hypoxanthine and guanine) and pyrimidines (e.g., uracil, 6-methyluracil and cytosine) are also being marketed. Cheapest product is de-fatted salmon milt at \$2/lb.; most expensive—\$3/mg.—is cytidine sodium diphosphate. No one product, however, accounts for a major volume of business. "Some of our products," rues Schink, "remain in inventory indefinitely."

Krishell began by researching wood chemicals, gave up when neighboring lumber, pulp & paper and plywood companies began expanding their silvichemical studies. The company still makes quercetin and dihydroquercetin from Douglas fir bark, but it has had more success with other native raw materials.

Crabs and Hops: About 10 tons of salmon milt, for instance, are processed each year. Yield: about 48 kilograms of protamine sulfate and 20 kilograms of desoxynucleic acid. Processing starts with extraction of the desoxynucleic acid with caustic soda. Next comes isolation of the protein fraction, separation of the peptones and extraneous protein material from the simpler protamine.

Crab canneries offer shells for the asking, and only a small percentage (about 1 ton/yr.) of the available material is utilized for glucosamine production. Wholesalers provide oysters for glycogen preparation. Krishell takes 150 gal./yr. of the Willapa Bay (Wash.) variety, at the going price.

Oregon hops are solvent-extracted by Krishell to produce lupolon and a by-product, humulon. The latter is unstable, is stored as its lead salt. Lupolon, less soluble than other extractions, is readily isolated and further purified.

Antimetabolite Shift: In recent years, Krishell's interest has shifted to the antimetabolites, principally purine and pyrimidine derivatives used in cancer research and elsewhere. Adenine sulphate, an increasingly important

member of this group, is obtained from discarded brewery wastes.

Founded by Four: Krishell* was founded in January of 1948 by chemists Robert Wong and Fred Facer along with two silent investors. Following a disastrous fire in the lab in 1949 (in which both were injured), Facer and Wong dropped out; the two remaining founders retain controlling interest.

Schink and several others hold minority interests. Though it is a registered corporation, Krishell shares are closely held.

Schink counts his decision to become a manager and part-owner of a small firm a happy one. But the business isn't without its headaches. "There are a lot of basement labs in the country," he says, "and many people in university and government research laboratories are trying to pick up a few extra dollars by making rare chemicals."

"Frankly, such producers are a discouraging element because their lower-than-competitive prices often do not reflect true costs. We counteract this by trying to be the first to make a product."

Then there's the possibility of patent infringements, since many of Krishell's products are made by standard text-book formulas. "We have discovered," says Schink, "that some of our listed items were covered by someone else's patent. So we would try to get a license. Everyone has been rather cooperative. In most cases they no longer made—or never made—the product in question, were not interested in making it, and were willing to license it on a reasonable basis."

Schink has problems other than the usual managerial ones—e.g., like the spark plug of many other small firms, he can't be spared away from the business for extended periods. Still he's more than satisfied with his lot. "The advantages of running a small, rare chemicals business," he declares, "include being directly responsible for your own destiny, initiating research and carrying it all the way through to production and sales, making a product you can be proud of and—of course—living where you want to live."

*Strictly a coined name, arbitrarily chosen to avoid selection of a local name (since the founders hoped to do business on a national basis), or a family name (since the ownership might change—as it has).



As acknowledged pioneers and recognized authorities in the correct use of pyrethrum, allethrin and their most effective synergists, MGK 264 and piperonyl butoxide, we offer standardized concentrates, extracts, dusts of guaranteed uniformity.

If your aerosols, sprays, or dusts include the use of the powerful, safe and spectacular knock-down agents, pyrethrum and allethrin, send your inquiry today. All requests for information answered by qualified authorities. Write.



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**Silica
Talc
Diatomaceous
Earth**



BERKSHIRE



**Filter Aids
Zircon Sand
Zircon Flour
Sodium Chlorite**

BERKSHIRE CHEMICALS, INC.

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Innis Speiden Company Division
New York • Philadelphia • Boston • Cleveland • Chicago

HEAT EXCHANGERS IN TWO WEEKS!
Single and double pass stainless steel heat exchangers are available in a wide range of capacities—ask for Bulletin 519.

Pfautler

Pfautler Corrosioneering News Published by The Pfautler Co., Rochester, N.Y.

Lemons, fatty acids, and tall oil— from new wiped-film evaporator

More and more industrial firms are uncovering areas of greater profit with Pfautler's new wiped-film evaporator—introduced *only four months ago*. This improved evaporator offers low-cost development opportunities to many industries employing vacuum distillation, e. c., chemical process, food, petroleum, pharmaceutical, and plastics.

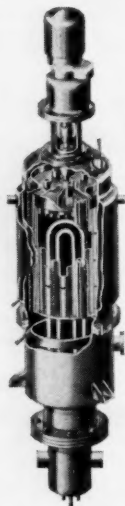
One chemical company is experimenting with extra-fast recovery of naphthenic acid and tall oil. A food processor is obtaining a more concentrated lemon distillate in less time than ever before. Promising results have been obtained for other companies involving Ethylene Glycol, corn oil, soybean oil and various fatty acids.

Higher heat transfer rates and faster evaporation contribute to greater profits and purer distillates in many other areas. If product purity, speed, and profit are uppermost in your area, you should compare Pfautler's new, improved wiped-film evaporator with your present distillation equipment. It offers you these important benefits:

Improved Heat Transfer—high heat transfer rates are possible for even highly viscous products, due to the turbulence-promoting carbon blades.

Short Contact Time—as low as a fraction of a second; thus, no thermal deterioration of heat sensitive materials.

Uniform Film Thickness—walls cleanly wiped so as to promote controlled turbulence and uniform thin film



CUTAWAY VIEW of the 12-inch Pilot Plant Evaporator. Product capacities of this model range from 40 to 1000 pounds per hour. The quality of results you obtain from Pfautler's small units can be dependably duplicated in production size units.

thickness without fouling and solids build-up.

Low Operating Pressure—from atmospheric to a fraction of a millimeter. **Minimum Pressure Drop**—pressure drop between evaporator and condenser held to less than 1/10 millimeter of mercury at one mm Hg operating pressure.

Economical Operation—due to high heat transfer, short contact time, and low power consumption; thus, operations are more efficient and less costly.

Space Saving—an internal rather than an external condenser is built into the still, thus eliminating inter-connecting piping and the waste of costly floor space.

Low Maintenance—foot bearing not required, slow operating speed minimizes wear, and "floating" wiper blade is unaffected by thermal expansion.

Three standard models are available: the two-inch laboratory evaporator; the 12-inch pilot plant evaporator and the 36-inch production model. More complete facts about any one of these units can be found in Data Sheet No. 39.

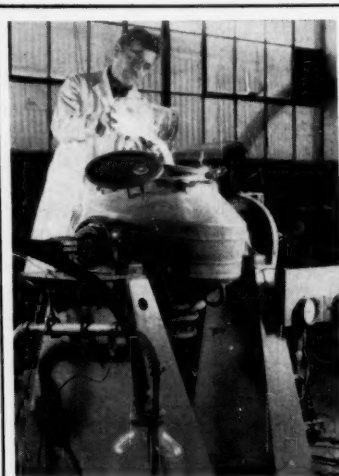
Mail the coupon today. Or ask your Pfautler representative for details.

Exclusive dimpled jacket cuts stainless steel costs

Costs can be reduced greatly with Pfautler's code-approved dimpled jacket design—for several reasons:

The design enables a stainless steel vessel to withstand much greater jacket pressures than it ordinarily could. In fact, jacket pressures up to 150 psi require no increase in metal thickness! Such savings in material represent sizable savings in cost.

Costs are further reduced through standardization. Dimpled jacketed reactors—kettles are available in standard 750- to 2000-gallon sizes. Constructed of Types 304 and 316 stain-

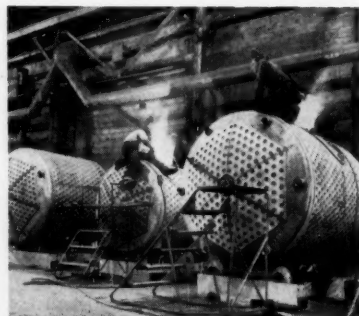


PRETEST YOUR PRODUCT FREE in this Pfautler pilot plant glassed steel dryer-blender. This standing offer has enabled many chemical manufacturers to predict performance on new materials or compare operation with conventional equipment. Complete reports are furnished or you can send your own man to observe results. To date, Pfautler units have reduced drying and blending cycles drastically over previous methods. For an appointment, call your nearest Pfautler office or use coupon, if preferred.

less steel, many sizes are carried in stock along with such prefabricated parts as nozzle openings, agitators, stuffing boxes, and drives.

Generally, units from 5 to 500 gallons come equipped with conventional jackets and clamped-top heads. Openings are ample and will meet most process requirements.

Standardization assures quick delivery—so the costs of preparing engineering drawings and estimating prices are reduced.



CODE-ACCEPTED for pressures far beyond conventional jackets of equivalent wall thickness, Pfautler dimpled jacketed reactors point the way to reduced costs.

Corrosioneering News

Quick facts about services and equipment available to help you reduce corrosion and processing costs.

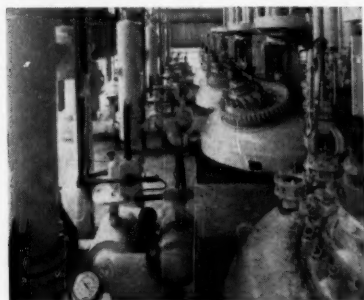


You can actually cut stainless steel costs in more ways than one by specifying Pfaudler's dimpled jacketed design. Contact your Pfaudler representative for more information.

Or mail the coupon today. Ask for Bulletin 904.

No need to spend or wait for special polymerizers

Engineering experience with all types of polymerizers has led Pfaudler to incorporate their best features into standard designs. You can cut costs and get faster delivery by specifying one of these standard glassed steel polymerizers.



Pfaudler glassed steel polymerizers for the production of polyvinyl chloride.

Available in 2000- or 3700-gallon sizes, Pfaudler's reactors are rated for either 150 or 200 psi. They are engineered to give you adaptability to a wide range of services.

Standard Pfaudler polymerizers offer these important benefits:

Reduced cost—glassed steel costs less than alloy materials. Savings are especially high when high-pressure construction is required.

Assured purity—all surfaces in contact with the product are nonmetallic. Glass cannot discolor products or act as a catalyst to promote unwanted side reactions.

Easy to clean—practically nothing adheres to a glass surface. Cleaning is simple and fast.

Easy to operate—a larger manhole and demountable blade agitator result in more convenient operation.

Before you spend and wait for a special design, check the adaptability of Pfaudler's standard glassed steel polymerizers. Mail the coupon for more information—ask for Bulletin 932.

Emergency at Gamma Chemical met by 3-day delivery of 500-gallon reactor

When extra processing capacity was urgently needed recently at Gamma's Great Meadows plant in New Jersey to custom process a new organic chemical, Gamma called Pfaudler and asked how fast a 500-gallon reactor could be shipped.

"How about the day after tomorrow," countered Pfaudler. "Sold!" said Gamma. Waiving the normal ten-day delivery schedule, Pfaudler rushed a standard unit through the shop even before the customer's written order arrived. The emergency was met—a 500-gallon glassed steel reactor was shipped—in just three days' time!

Gamma Chemical's plight points up one of the ways you can benefit from Pfaudler's policy of stocking standard glassed steel reactors. Fast delivery provides only one of the savings, however. You can also cut initial costs by eliminating special engineering drawings, special parts and material custom-designed units require.

You get an adaptable, corrosion-resistant reactor whenever you specify a standard Pfaudler glassed steel vessel—resistant to all acids (except HF) and alkaline solutions up to pH12. Each reactor is completely assembled and ready to ship within two weeks from receipt of your order.

Take advantage of Gamma Chemical's experience and check with Pfaudler before you buy your next



READY TO GO. A standard 500-gallon reactor is readied for quick shipment to Gamma Chemical. This vessel was on its way to Gamma's Great Meadows plant even before a written order had arrived.

reactor. Contact your Pfaudler representative for more information on standard reactors. Units stocked for ten-day delivery include the following capacities: 30, 50, 100, 200, 300, 500, 750, 1000 and 2000 gallons. Check the coupon for sizes in which you are interested.

THE PFAUDLER CO., Dept. CW-1, Rochester 3, N. Y.

Please send me ☐ Wiped-Film Evaporator Data Sheet 39 ☐ Bulletin 932—Glassed Steel Polymerizers ☐ Dryer-Blender Data Sheet 26 ☐ Standard Glassed Steel Reactors, Bulletin 860 ☐ Stainless Steel Equipment, Bulletin 904 ☐ Standard Heat Exchangers, Bulletin 519.

Name.....
Title.....
Company.....
Address.....
City..... Zone..... State.....

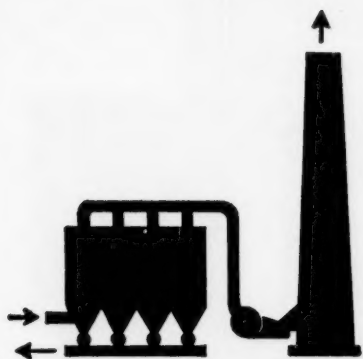
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- Reorganizing your company for stiffer competition.
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- Selling to the giant coatings market.
- Plastics—where they're heading.
- How operations research can serve you.
- Ways to make your staffers more creative.
- Synthetic-detergent products and producers.

CW Reports have the answers—and reprints are easy to get.

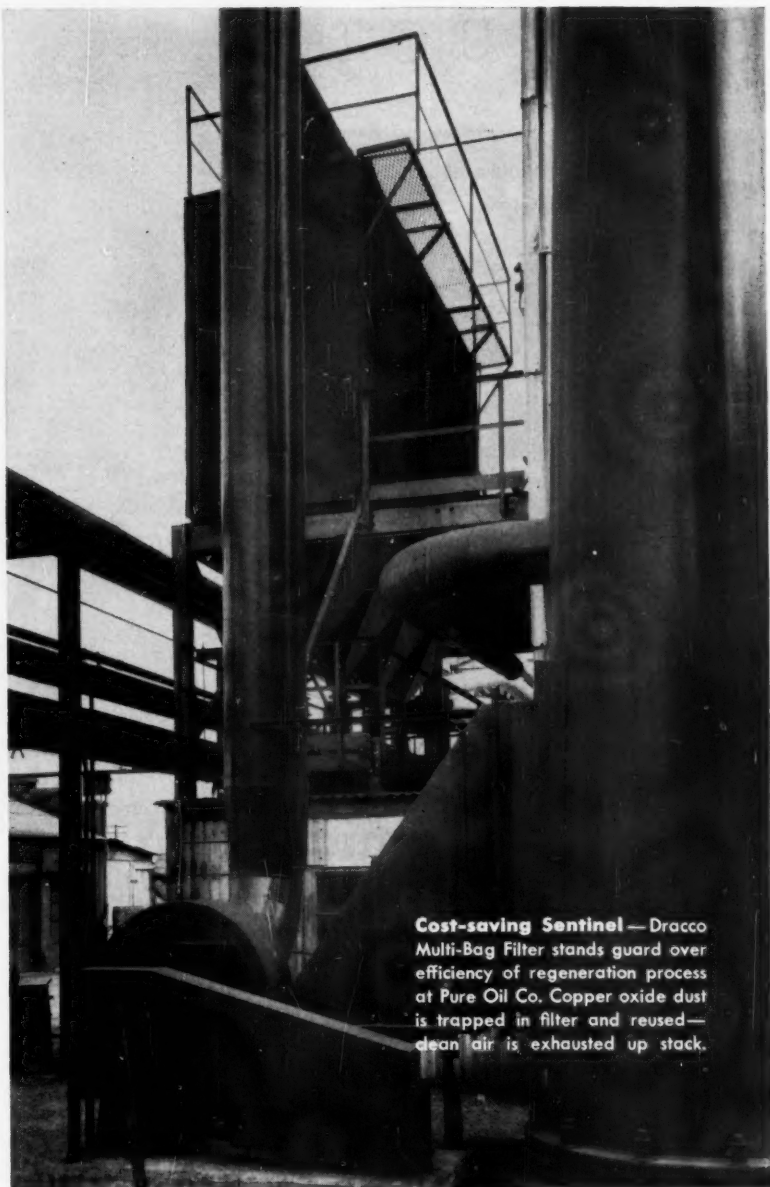
Just check the desired items on the coupon below and mail to:

Chemical Week, Reprint Dept., Room 2400, 330 W. 42nd St., New York 36, N. Y.	
Forecast '57	\$1.50 <input type="checkbox"/> Send _____ copies
Pesticides—Heading for \$1 Billion/Year (96 pp.)	\$1.50 <input type="checkbox"/> Send _____ copies
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Plastics	\$1 <input type="checkbox"/> Send _____ copies
Operations Research	\$1 <input type="checkbox"/> Send _____ copies
Synthetic Detergents	\$1 <input type="checkbox"/> Send _____ copies
Enclosed is \$..... for this order. (Special bulk rate on request.)	
Name	
Address	



**DRACCO RECOVERY
SYSTEM AT REFINERY
MEANS:**

**pure air,
sure
savings
for
Pure Oil**



Cost-saving Sentinel—Dracco Multi-Bag Filter stands guard over efficiency of regeneration process at Pure Oil Co. Copper oxide dust is trapped in filter and reused—clean air is exhausted up stack.

■ At its Toledo refinery, Pure Oil Co. has halted escaping dust from a copper oxide regeneration process with Dracco Dust Control equipment. This dust problem was a costly nuisance—wasting valuable chemicals and causing undesirable working conditions.

Pure uses a cupric oxide for sulfur removal during refining of naphthas.

Regenerating the spent cupric sulfide back to the oxide requires roasting, grinding and handling operations.

Dust is now trapped at multiple sources and recovered at 99½-100% efficiency in a Dracco Multi-Bag Filter. The system operates 24 hours a day, exhausting clean air with no visible dust. Savings are realized by returning

collected copper oxide to process.

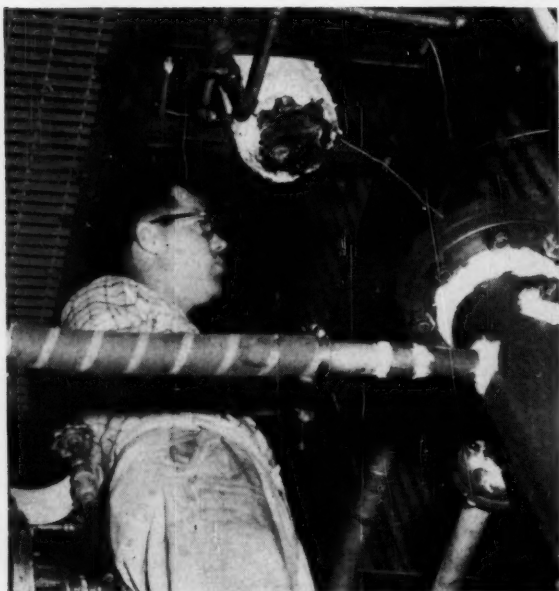
For Pure Oil Co., Dracco Dust Control now means pure air and cost savings. For *your* plant, a custom-engineered Dracco system can provide similar advantages. Why not call or write Dracco today?

DRACCO CORPORATION
4080 East 116th Street • Cleveland 5, Ohio

Bulletin 800 is Dracco's 40-page catalog on dust control and recovery. Contains detailed facts and figures on all dust control equipment. For your copy, write Dracco today.

DRACCO *Performance Proved*
Airstream CONVEYORS • DUST CONTROL EQUIPMENT

PRODUCTION



CHEMICAL JUNKMEN: Doug (left) and Ralph Hird tackle wastes with process know-how, a new pilot plant.

Tapping Chemical Junk for Profits

With the help of a newly completed pilot plant, Hird Chemical Refining Corp. (East Palo Alto, Calif.), is seeking new ways of tapping off salable chemicals from the abundant wastes of other people's chemical processes.

Like Truland Chemical Co. (*CW*, June 23, '56, p. 58) and several other waste reprocessors,* Hird has turned a tidy profit from the custom refining and resale of such chemical junk. Organized in October '49 by brothers Ralph and Doug Hird, the company has at least doubled its business each year, boosted its gross from less than \$4,000 in 1950-51 to more than \$130,000 last year.

Looking Ahead: Always ready to tackle an unusual waste problem, the Hird brothers give up on only a few. One of these was Kovar (cobalt-nickel-iron) metal scrap, which requires special know-how and expensive processing equipment. "Chemical processing mistakes still account for a large percentage of our business," say the Hirds. "In some cases, the

mixtures present real separation problems; but they're generally run-of-the-mill operations."

To help solve future posers, and to investigate bigger, better, more diversified recovery operations, the company recently installed a pilot plant at its new (built in 1955) \$300,000, 5-acre plant. Already slated for study in the experimental unit are several projects:

- Transformer oil recovery tops the list, is now being done by several small firms through a 2-step method of heating (to drive off water) and clay absorption of impurities. Hird's goal: a continuous process that will "eliminate the shovels."
- Recovery of decolorizing plasticizers.
- Reclaiming of rolling mill lubricants.
- Lube oil recovery on a continuous, fully automatic basis.
- Reclaiming of rubber in a form other than rubber. Hird hopes to devise a method of fractionating old tires, sees in this prospect the volume and continuity needed for a really profitable project.

Know-how for Rent: A by-product

of the pilot-plant work might well be a consulting and licensing business. Hird says it's willing to sell know-how, on a consulting basis, to any company with a waste-chemical disposal problem, and to license its processes to reclaimers in other parts of the country.

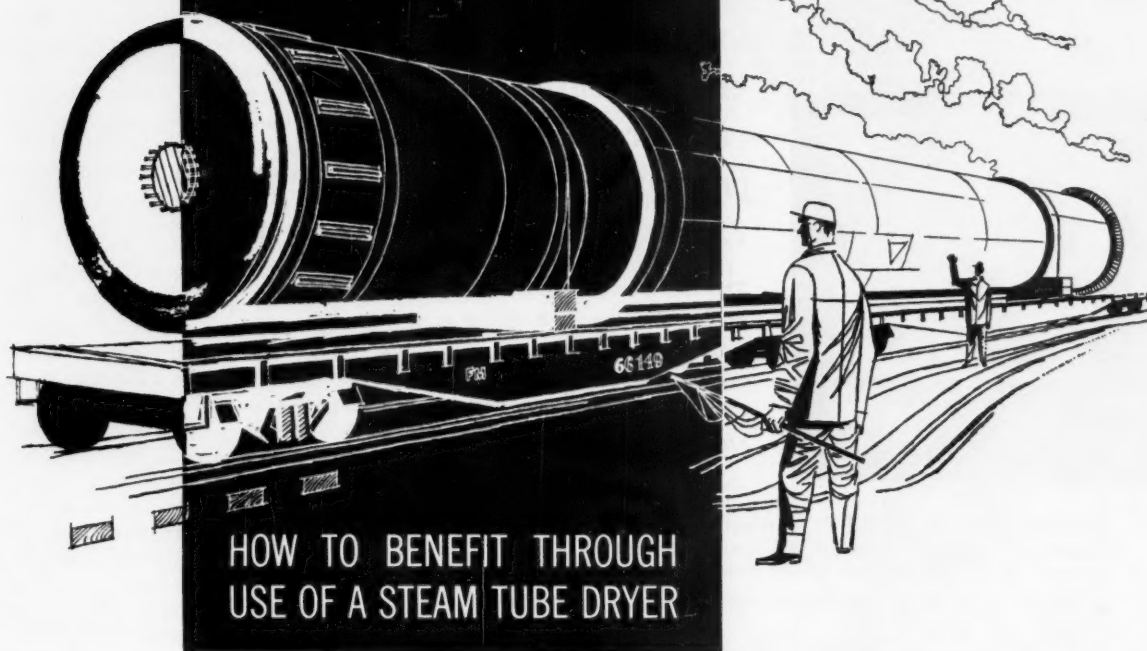
Despite the abundance of reclaimable wastes, Hird finds its stiffest competition comes—not from other reclaiming companies—but from new-material suppliers. For, though the recovered chemicals can meet exacting purity specifications, potential customers are sometimes leery of such materials, however pure they may be.

This problem is becoming more acute with a gradual increase of Hird's non-contract business. On this basis, the company buys chemical junk for recovery, sells back only that portion that the customer can reuse, and retains any other valuable components for sale to others.

Backed into Junk: Waste recovery didn't figure in the Hirds' plans when they left Lehigh University to specialize in the manufacture of allethrin, other relatively high-cost organic chemicals. But they soon found the investment, equipment, processes and

*Among them: Oil & Solvent Process Co. (Los Angeles); Chemical Service Corp. (Chicago); Economy By-Products (Oakland, Calif.); and many others specializing in one or two commodities.

facts you should know
about dryers . . .



For over 55 years, Louisville Dryers have been solving industry's drying problems and effecting marked economies. This experience can often be applied to provide unusual benefits in specific cases, possibly yours, for example . . .

Q. Since avoiding dust loss and contamination by furnace gases indicates the choice of an indirect heat rotary dryer for my material, what type of indirect dryer would you recommend?

A. Unless there are abnormal conditions, we would recommend a steam tube dryer, especially if the material is heat sensitive.

Q. What advantages does the steam tube dryer offer in comparison with indirect fire types?

A. There are many advantages. One is ease of operation and low maintenance costs due to the definite moderate temperature (established by steam pressure) imposed on both

the material being dried and on the dryer itself. Another advantage is that there is no furnace refractory maintenance. Still another advantage is quick "warm up" and "cool off". In many cases where the drying operation is intermittent, there is no need to shut off the steam supply or stop rotation when the wet material feed is interrupted since steam is condensed in quantity only when wet material is fed.

Q. Isn't steam supposed to be an expensive drying medium?

A. That depends on how the steam is used. It is true that a low overall efficiency results (often as low as 25%) when steam is used to heat air for low temperature drying. However, the Louisville Steam Tube Dryer normally utilizes 85% or more of the available heat in the steam. By combining this with a reasonable minimum efficiency of 80% in modern

small steam generators (and higher in large boiler plants), you get an overall efficiency close to 70%. This compares with indirect fire dryers which develop an efficiency seldom higher than 50% and generally less.

Q. Does material insulate the tubes by sticking to them or by clogging the spaces between tubes?

A. Very few materials have this tendency to any serious extent and most of these, when properly conditioned before feeding, handle without difficulty. For the balance, no dryer using heated surfaces for heating the material is a proper application.

Q. How can I be sure a Steam Tube Dryer will handle and dry my material satisfactorily?

A. The General American dryer pilot plant is at your service. No charge for routine tests and demonstrations. No obligation, either. Write for test date.



LOUISVILLE DRYING MACHINERY UNIT

GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer General Sales Office: 139 So. Fourth Street, Louisville 2, Kentucky

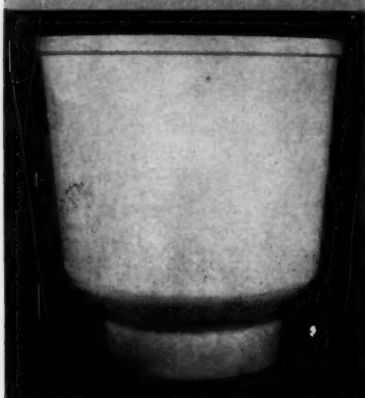
Eastern Sales Office: 380 Madison Avenue, New York 17, New York

In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario, Canada

General Offices: 135 S. La Salle Street, Chicago 90, Illinois

MIN CHEMISTRY at work

case:



Big, strong, dense, translucent reinforced plastic part at high filler loading

This is a fiberglass fertilizer hopper for farm field rigs. It's about 17" in height and diameter. Goodyear Aircraft Corp. mass-produces it by the preform-liquid mold method.

MINERAL FILLER REPORT: ASP 400 is the M & C filler used in this hopper. Goodyear says ASP 400's performance in all five critical "areas" is unmatched by any other filler:

- Smooth, dense, strong part*—to end trouble from acids, weather, breakage.
- Translucency* to see contents at a glance—due to ASP 400's excellent wet-out and suspension.
- No reaction on resin*—no catalytic effects . . . long pot life.
- High filler loading*—no viscosity problems.
- Molding ease, proper flow and thixotropy*—giving fast die fill-out and closing for high production, low reject.

Our business is to supply low-cost non-metallic mineral products that are process-engineered to make things go smooth in your plant . . . good in your markets. If you'd like more information, use the coupon.

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SERVICE AND STOCKS
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PRODUCTION

research requirements of organic synthesis were beyond the grasp of their struggling young firm. To make use of their idle equipment, process know-how and the capital already invested in the company, the Hirds accepted a friend's invitation to attempt the recovery of used perchlorethylene.

But the job that really persuaded the Hird brothers to become chemical junkmen came in September 1950. Union Carbide's San Francisco warehouse had 250 drums of ethyl formate that had turned black during shipment. Hird received a contract to reclaim the material for raisin fumigation, turned out the first drum just 12 hours later.

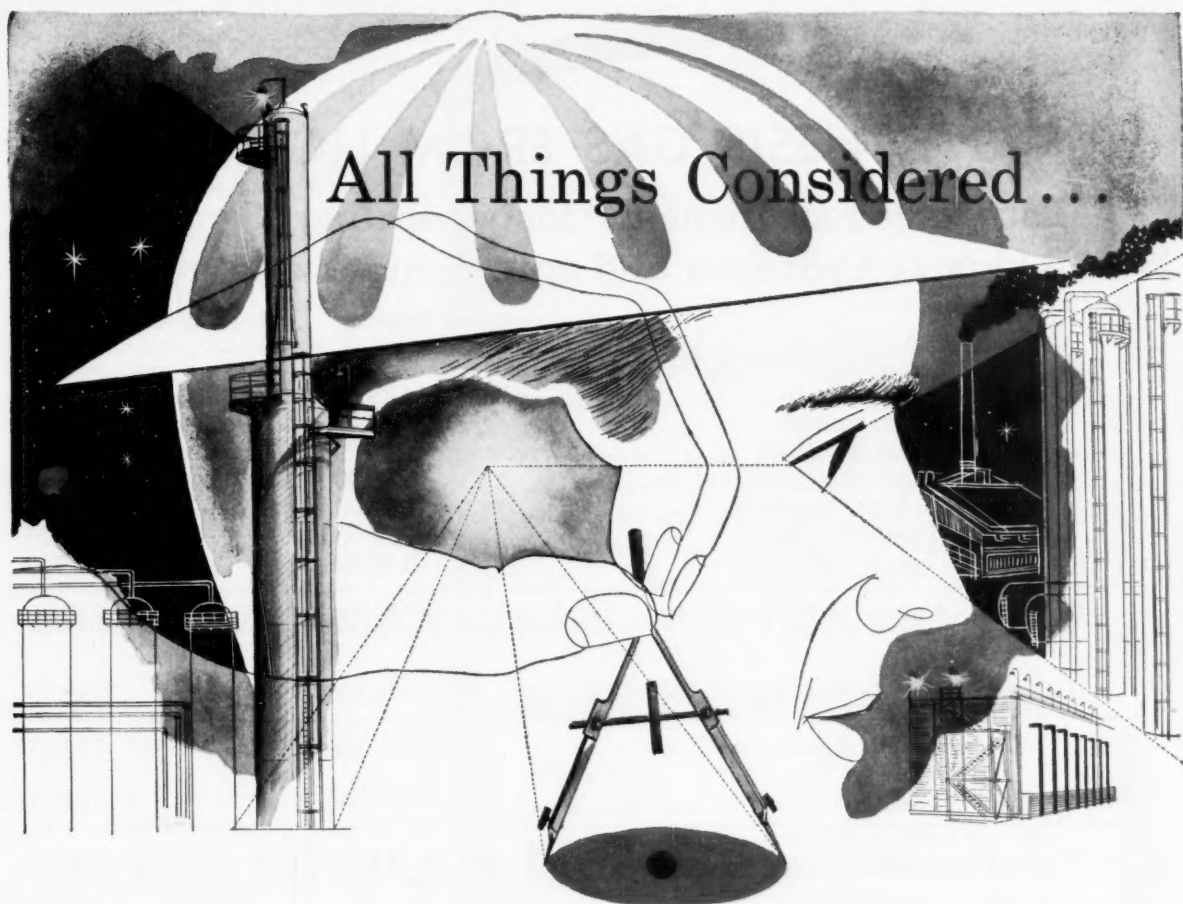
With the successful completion of the Carbide job, the Hirds set out in earnest to solicit recovery business. Though chemical processors provided the likeliest sources of chemical junk, they weren't the only ones.

Says Doug Hird, "Just about any large corporation has wastes we can work on . . . and we find that most are willing to work with us." They were amazed at the quantities of junk turned out by electronics firms, pharmaceutical houses, paint producers and machine shops, estimate that even now they're handling less than 10% of the available supply.

The bustling electronics industry on the San Francisco Peninsula supplied the initial spurt to the new venture. The Hirds found that much of the alcohol, trichlorethylene, acetone and other solvents—discarded after a single use—could be easily purified. This they did—transporting the waste to their plant and returning purified material on a contract basis.

A similar contract with the government to recover all of the degreasing solvents used in the 12th Naval District today accounts for about 4% of Hird's business. The largest share of the company's present work—accounting for 60% by weight, 40% by dollar value of reprocessed chemicals—is the recovery of ketones, petroleum solvents, alcohols, etc., for the paint industry.

By maintaining high standards and precise specifications, Hird and others in the field have broken down much of the purchasers' prejudice against reclaimed chemicals. Winning this kind of acceptance is the key to the door of new opportunities for chemical junkmen.



All Things Considered...

PRITCHARD'S SINGLE RESPONSIBILITY CONTRACT HAS MORE TO OFFER YOU!

CONSIDER THE TIME . . . When building a new plant, modernizing or expanding present facilities, time is money. Every extra day of construction means greater cost to your company.

CONSIDER PRITCHARD . . . Pritchard's Single Responsibility Contract saves valuable time by coordinating the project from engineering through final testing. Work begins on your plant before engineering drawings are completed. Pritchard teams work closely together, assuring a continuous, rapid flow of activity.

CONSIDER YOUR INVESTMENT . . . You want your construction investment to start paying a return as rapidly as possible; and to free this capital for other uses.

CONSIDER PRITCHARD . . . Pritchard aids in this area, too. First, the plant goes into production quicker, thereby producing income sooner and you save interest on your invested money. Second, Pritchard's diversified purchasing experience saves you time, trouble and cold cash by coordinating all purchasing of equipment, materials and labor.

CONSIDER PERFORMANCE . . . The performance and efficiency of your new plant is of paramount importance.

CONSIDER PRITCHARD . . . Pritchard believes that coordination of the entire project under one engineering service is a prerequisite of a successfully completed project. You get complete coordination from Pritchard *plus* unmatched engineering service without paying a premium price. Performance of every project is guaranteed because Pritchard uses specialists to perform highly specialized jobs.

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SYNTHESIS GAS FROM LIGNITE

Estimated requirements* for generating 50 million cu. ft./day of hydrogen and carbon monoxide from . . .

Capital cost of plant	natural lignite (H ₂ -CO ratio = 2.5)	steam-dried lignite (H ₂ -CO ratio = 2.0)
Gas-generating battery	(19 units) \$16,089,200	(15 units) \$12,702,000
Producer-gas systems	(19) 3,325,000	(15) 2,625,000
Cooling and scrubbing	(19 systems) 3,454,200	(15 systems) 2,727,000
Steam-generating plant and line	336,000	417,000
Coal handling, complete	692,000	600,000
General plant facilities	196,000	181,600
General plant utilities	165,000	143,800
Total plant cost	\$24,257,400	\$19,396,400
Interest during construction	970,300	775,900
Subtotal (for depreciation)	\$25,227,700	\$20,172,300
Working capital	2,523,000	2,017,000
Total capital investment	\$27,750,700	\$22,189,300
Operating costs		
Process materials	\$1,467,510	\$1,561,000
Direct production cost	1,908,100	1,475,000
Utilities and auxiliary materials	754,730	624,860
Administration and overhead	413,600	319,800
Fixed costs	1,625,250	1,299,550
Total operating costs	\$6,169,190	\$5,280,210
per 1,000 cu.ft. of H ₂ +CO	37.6¢	32.0¢

*Source: U.S. Bureau of Mines Report of Investigations 5272.

Looking Ahead to Lignite

Despite assurances by coal producers that coal resources will be adequate for many years to come, coal-dependent industries are pushing development of several techniques of utilizing lignite and other sub-bituminous fuels. Chemical producers, too, are eyeing lignite as a source of raw materials.

A good idea of what it will cost to use the poorer grades of coal as raw material for chemical synthesis is provided by the figures in the table above. Gleaned from a recent Bureau of Mines Report of Investigations (No. 5272), they summarize the findings obtained from pilot production of synthesis gas from

lignite at the bureau's Grand Forks, N. Da., station.

Spanning a six-year period from 1945 to 1951, the bureau's lignite project provides a basis for estimating both operating costs and equipment requirements. The pilot plant was operated for 8,749 hours, turned out more than 84 million cu. ft. of gas

Eastman makes these basic chemicals for...

If you produce herbicides and pesticides, it will pay you to look to Eastman as the source of your basic chemicals. The uniform quality of the Eastman chemicals listed below helps you maintain your standards and assure uniformity in your final product.

...HERBICIDES AND PESTICIDES

acetic acid	isobutyl alcohol
propionic acid	2-ethyl isohexyl alcohol
n-butyric acid	2-ethyl hexyl alcohol
isobutyric acid	isobutyronitrile
2-ethyl hexoic acid	manganese sulphate (Tecmangam)
ethyl alcohol	triethyl phosphate

...ANIMAL FEEDS

Tenox BHT—Agricultural Grade: A form of BHT specially prepared for feed use—free-flowing, non-dusting, and granulated in a particle size comparable to that of other feed components. Protects vitamin content of feeds, improves pigmentation and protects chicks against deficiency diseases such as encephalomalacia.

Tecmangam: Contains 75-78% manganese sulphate. Completely soluble and readily assimilated, Tecmangam is an ideal source of manganese for feeds. In manganese-deficient areas, Tecmangam can be added to fertilizer to supply this essential element.

For information, samples or specifications on any of the Eastman basic chemicals for use in herbicide, pesticide and feed production, write to any of the sales offices listed below.

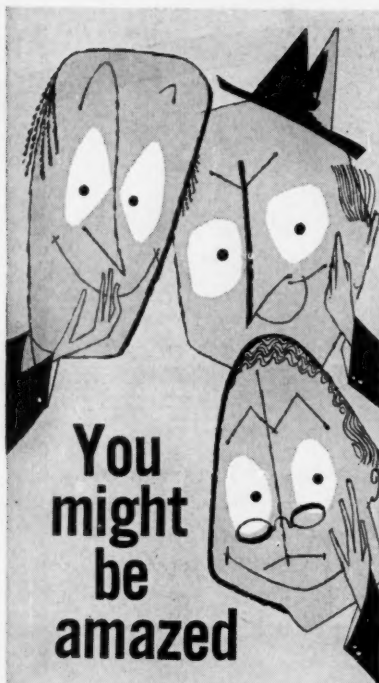
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SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; Houston; St. Louis.
West Coast: Wilson Meyer Co., San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.



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Remarkably versatile Supergum H improves products, processes for thousands of manufacturers

This modified vegetable gum, prepared in the form of cold water-soluble powder, means many things to many manufacturers. Here are just a few of its many uses:

SOAPS, DETERGENTS—as a soil suspending agent added to the product or the laundry wheel.

PAPER—for sizing and coating. Compatible with other binders and fillers. Improves tensile strength and printability.

LEATHER—for pasting, or as a binder in finishes.

RESINS, PAINTS, LATEX—in combination with glues, starches, and gums, it gives good adhesion to cardboard, wall-paper, glass, aluminum surfaces.

CERAMICS—as a binder or foundry-core binder.

SPRAYS—as sticking agent or adhesive in insecticidal or other sprays.

COSMETICS, PHARMACEUTICALS—as a stabilizer and thickener.

Supergum H may improve your product or process, too! Write for test sample and further information. No obligation, of course.

JACQUES WOLF & CO.
Chemicals PASSAIC, N.J.

Plants in: Clifton, N.J., Carlsbad, N.J., Los Angeles, Calif.

PRODUCTION

from 1,882 tons of natural and steam-dried lignite.

Since partial combustion of lignite with oxygen (air oxidation produces gas with a high nitrogen content) entails considerable added cost for oxygen facilities, the bureau concentrated on an externally heated gasification process.

Gasifier Unit: The annular retort used for the bureau's tests consists essentially of four functional sections: retort-heating section, lignite-charging section, residue-discharging section, and the annular retort itself.

Heating gas, in admixture with recycled combustion products (to limit maximum flame temperature), is preheated to 1300 F and fed to the combustion chamber through 12 tangential burners at three levels around the retort. Combustion produces a temperature of 1600 F for gasification of the lignite, products exit at 600 F through a process-steam preheater. The high temperatures encountered in the heat exchanger require stainless-steel (type 309) construction, which accounts for almost half of the cost of the retort.

Drying Pays: Considerable savings can be effected, the bureau found, by the use of steam-dried, rather than natural, lignite. Despite the higher cost of process material (dried lignite costs about \$3.60/ton as compared with \$2.00/ton for the natural material), synthesis gas from dried material is 5.6¢/11,000 cu. ft. cheaper than that made from natural lignite. Biggest advantage: dried feed increases retort capacity (from 14,000 to 17,600 cu. ft./hour), reduces capital cost of the plant.

The 32¢/1,000-cu.-ft. price is high for unrefined synthesis gas. Even so, chemical producers† can look to lignite to supply a greater share of vital coal-derived raw materials as higher-grade sources* dwindle.

†Alcoa has for some time used lignite as a source of power and chemicals; M. W. Kellogg developed a gasification process employed in South Africa for synthesizing gasoline from lignite. And Australia's State Gas & Electric Corp. recently finished a plant to produce town gas from that country's abundant brown-coal deposits (*CW Jan. 21, '56, p. 64*).

*A current estimate by the U.S. Geological Survey places the nation's total coal reserve in the neighborhood of 1.9 trillion tons. But economically recoverable reserves represent a relatively small fraction of this total: fuel-grade bituminous coal, recoverable at present costs, constitutes something less than 30 billion tons; sub-bituminous coals and lignite in commercially minable deposits are estimated at just over 20 billion tons.

PROCESSES

Octane Upgrade: Its new Iso-Ke isomerization process, says M. W. Kellogg, converts low-octane naphthas into valuable blending stocks. The method is said to effectively treat materials that can't be economically upgraded by conventional catalytic reforming.

Both pentanes and hexanes can be treated in a single reactor; isomerization of both occurs in the presence of hydrogen. Key to the vapor-phase reaction: a new precious-metal (non-platinum) catalyst developed in Kellogg's research labs.

Flexibility of the Iso-Kel process, says Kellogg, permits the unit to handle feed of various degrees of isomer prefractionation, and operate under a variety of conditions in recycling unconverted material.

The processing scheme: C₅-C₆ naphthas are charged to a de-isopentanizer, where they are joined by pentane isomerization product. Isopentane is taken overhead; bottoms go to the reactor. Hydrogen-rich gas is charged with the feed to the reactor, later recovered from the effluent for recycle. Reaction product is debutanized, depentanized.

The isopentane stream, boosted to 104.9-octane rating, may be allocated for super-premium gasoline; the isohexane stream, at 88.7- to 92.4-octane, for regular gasoline.

Economic considerations indicate that the process should be operated to convert pentanes on a recycle basis, hexanes once through. Further upgrading—but at greater cost—could be achieved, claims Kellogg, by the addition of a de-isohexanizer and an auxiliary depentanizer to remove isomeric hexanes in the feed, or to give complete recycle of n-hexane.

Slag Cement: Japan's Construction Ministry last week predicted that a new cement process, developed by the ministry's Dr. Toru Mori, will produce cement "superior to Portland cement in many ways"—and from \$1.45 to \$2.75 cheaper than Portland. The process could benefit Japan's iron and steel producers by utilizing the slag they now dispose of at a high trucking cost.

Called No. 2 blast-furnace cement, the product is made by mixing limestone and blast-furnace slag. Mori succeeded in doing this (where others

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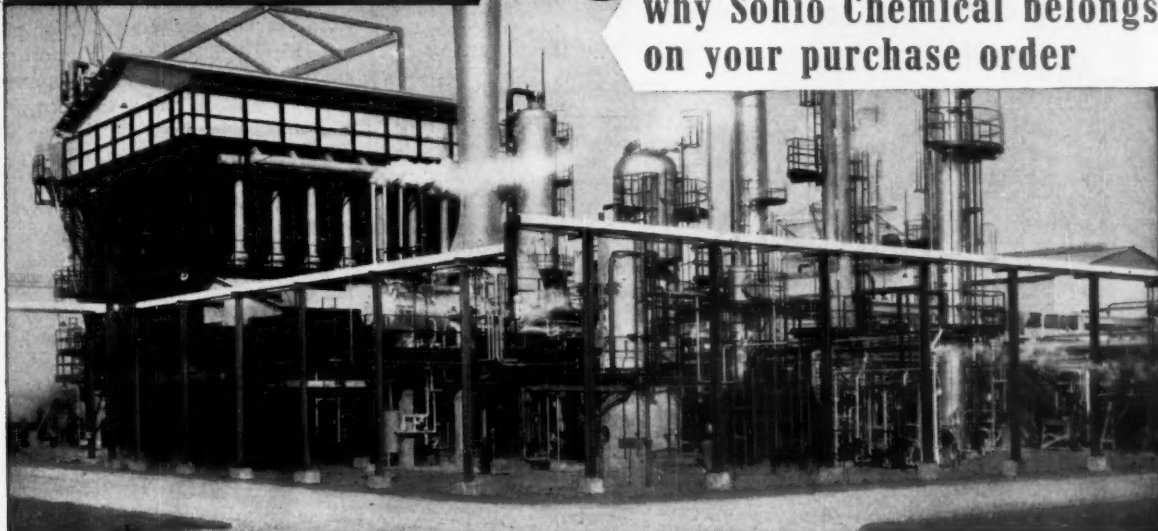
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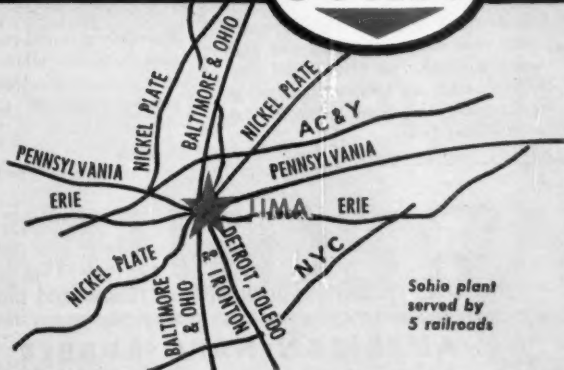
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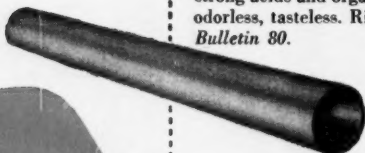
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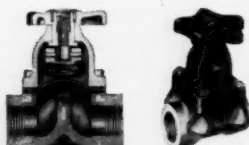
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ACE processing equipment of rubber and plastics

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PRODUCTION

before him had failed) by devising a method of pulverizing the materials separately, later blending them in 50-50 and 40-60 proportions.

The finished cement is said to be highly water-resistant, able to withstand temperatures up to 400 C. Because it is more corrosive than ordinary cements, it's not suited to steel-concrete building construction.

Shale Retorting: California Research Corp. recently received Australian patent 16,777/56 on a fluid retorting process that's claimed to prevent clinker formation during the recovery of hydrocarbons from oil shale.

The method involves distilling the hydrocarbon components from a fluidized bed of ground, 4- to 9-mesh shale. The larger particles left in the spent shale (retorted bing) are continuously withdrawn; and the residue, which contains carbon and other combustibles, is fluidized with an oxygen-bearing gas and burned in a kilning zone. After burning, it's again stripped of large particles and returned in a stream of steam or other fluidizing gas to supply heat in the retorting zone.

The process is said to be particularly well suited to the recovery of hydrocarbons from diatomaceous earth-type shales (tar sands) such as those found near Casmalia, Calif.

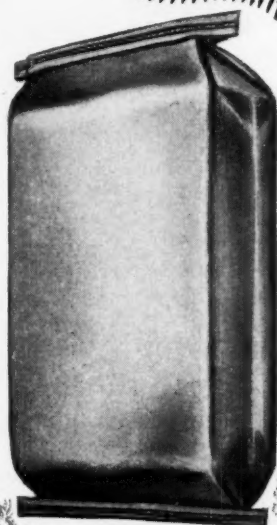
EQUIPMENT

Temperature Telemeter: A new line of surface-temperature resistors with a sensing element that is applied to the surface to be measured by pressing a finger over a small piece of Mylar tape is offered by Trans-Sonics, Inc. (Lexington, Mass.). Called Type 1371, the resistors have outputs up to 5 volts without amplification, can be used directly in a commutation circuit to modulate standard telemetering transmitters. Temperature ranges available: -300 to 400 F.

Air-Gas Traps: Hankison Corp.'s (Pittsburgh, Pa.) Mag-Pneu-Power trap uses combined magnetic-pneumatic action to discharge liquids from air and gas lines. Float is held magnetically until condensate build-up overcomes magnetic attraction. Float movement then actuates an air-operated piston which, in turn, opens the discharge valve. Pressure rating of the trap is 10-200 psig.

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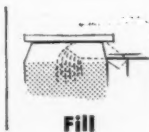


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Technology

Newsletter

CHEMICAL WEEK
January 19, 1957

First test of the Sheer-Korman high-intensity arc process (*CW*, March 17, 1956, p. 58) will be in a pilot plant to produce manganese for the General Services Administration. Moreover, a new company—U.S. Manganese Corp.—has been formed by Vitro Corp. (which has a 40% interest) Sheer-Korman (40%) and Great Divide Mining and Milling (20%) to exploit the process on domestic manganese ores. Great Divide Mining owns large Colorado deposits of rhodonite, the manganese ore that will be used in the test.

GSA has signed a \$270,541, 19-month contract with Vitro Laboratories Div., which will equip, operate and maintain the pilot plant in its West Orange, N.J., facilities.

The high-intensity arc process is characterized by a jet of luminous vapor up to two feet in length and a lot more brilliant than anything obtained in an ordinary arc. It's accompanied by temperatures between 7000 and 10,000 C, whereas temperatures from a "low intensity" arc stay below 3600 C. In the proposed application, the rhodonite will be vaporized by incorporating it (along with carbon) into the anode.

Weyerhaeuser Timber Co. is test marketing quercetin, the active ingredient in vitamin P, made from Douglas fir by a new process that is said to differ significantly from the solvent extraction worked up by Oregon Forest Products Lab. Production now is from a small pilot plant but Weyerhaeuser says it can make any grade quercetin in any quantity. The company's plans for the chemical depend entirely on results of a test-marketing program aimed primarily at pharmaceutical houses. (Quercetin, incidentally, is Weyerhaeuser's first silvichemical.)

Stauffer Chemical says that it now has titanium trichloride available in quantities "ranging up to hundreds of pounds." Actually, it tags the product as titanium subhalides (over 99% pure) equivalent to $TiCl_{2.9}$.

The trichloride has been the center of interest since Giulio Natta reported that, when used as a polymerization catalyst in conjunction with aluminum triethyl, it yielded more isotactic polyolefin than did the tetrachloride. Stauffer also points to potential use for it as a catalyst for low-pressure polyethylene, for a new *cis*-polybutadiene rubber and for Friedel-Crafts reactions.

And U.S.I. revealed last week that it is making aluminum trimethyl in pilot-plant quantities at Laurel (Maryland). It's using a sodium-based process that is adaptable to other aluminum alkyls (e.g., aluminum triethyl). U.S.I. also has aluminum sesquichloride available.

The aluminum trimethyl is under test as a fuel and ignitor for

Technology Newsletter

(Continued)

ramjets and turbojets. The company believes it also is potentially useful as a polymerization catalyst and chemical intermediate.

•
A new survey of research and development spending by the chemical industry and others is being planned by the National Science Foundation. Covering 1956, the study will update NSF's survey of 1953 research spending.

NSF will also ask Congress to okay regular annual reports on research and development efforts by industry and the federal government, and to authorize comparable surveys of non-profit institutes every two or three years. If Congress will agree, NSF will settle for less-detailed reports. And it will suggest that regular federal statistical agencies—e.g., the Census Bureau—conduct the studies under NSF guidance.

•
Kaiser is still not saying very much about the \$400,000, semi-commercial plant it is building at Nichols (Fla.). But here's some of the story: the plant will recover fluosilicic acid from phosphate wastes, make sodium silicofluoride for the \$1,366,000, 15,000 ton/year synthetic cryolite plant going in at Chalmette, La. (Kaiser received a certificate of necessity for a synthetic cryolite unit last November.)

The synthetic production will supplement a cryolite recovery system (from pot linings) that's just about to start up at Chalmette. Still a question: the process to be used to synthesize the cryolite.

•
American Viscose is ready to license its organic microfibers. Made by spraying a solution of an organic resin or amorphous material into an air stream, the microfibers range from 9.5 to 10 microns in diameter, have a permanent electric charge, are irregular in length.

Their fine size, Avisco feels, makes them suitable for employment as absorbents, and the static charge—it thinks should render them useful as efficiency filters. It also thinks they may find a place in non-woven fabrics and as insulation.

The patented (U.S. 2,483,405-6) process was developed for Avisco by Arthur D. Little, has been piloted at Marcus Hook, Pa., during the past year. The current activity, incidentally, is the result of Avisco's program to re-evaluate its old patents (*CW, Feb. 11, '56, p. 46*).

•
A systematic search for the best drugs or combination of drugs for treating high blood pressure will be launched by the American Hospital Assn. under a \$575,000 government grant. It's the biggest grant yet by the National Heart Institute, part of the National Institutes of Health.



Price is no tall tale to this Texan

(He helps stabilize glycerine price through increased production)

You might say our production-control men are traffic policemen for synthetic glycerine at our new Velasco, Texas, plant. They keep a sharp eye on temperatures and pressures, and direct product flow.

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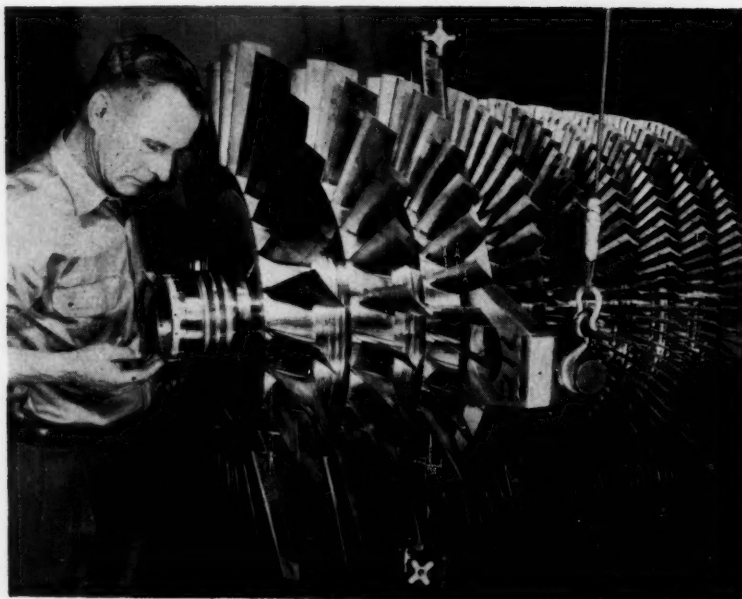
For, before this new plant existed, glycerine users were

up against fluctuating prices. It was nigh onto impossible to anticipate future costs. Following the market was like riding a bronco sidesaddle. But now that's ended. The added production of our Texas plant has put glycerine on a stable price basis. What's more, it has stabilized supply.

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JET AIRCRAFT ENGINES: One major outlet to spur titanium demand in . . .

'57: Titanium's Big Year

This year the titanium industry will take its biggest step forward. Topping last year's spectacular production jump to 14,500 tons (from 8,000 tons produced in '55), the expected '57 surge will likely double titanium sponge production, push it to the 25-28,000 tons/yr. level.

How long and how fast the titanium industry will continue to expand is hard to predict because of the many factors involved; but events of the past few years give rise to a highly optimistic outlook.

From virtually a standing start in 1948—when only 3 tons of sponge were produced in this country—output has climbed faster than most observers dared predict. Now, in the light of ever-lengthening strides made by the industry, the potential 1-million tons/year output (forecast two years ago) looks realistic.* But just when this mark will be reached is still highly speculative—and few, if any, industry observers will hazard a guess.

Sponge to Shapes: How the 14,500 tons of titanium sponge produced in

this country in '56 was utilized has been estimated by T. W. Lippert of Titanium Metals Corp. of America.

The total amount made, he notes, was approximately 4,500 tons in excess of the quantity needed to support shipments of finished metal. This excess sponge (with an estimated market value of \$28 million) went into in-plant inventory build-ups and government contractual purchasing.

Bulk of the sponge—the other 10,000 tons—was converted to 11,500 tons of ingot metal (the additional 1,500 tons of weight came from alloy additions and from recycling of titanium scrap).

Production of finished mill shapes from the ingot metal in '56 totaled 5,300 tons—about 25% more than had been predicted by the most optimistic first-of-the-year forecasters. Incidentally, this record output of mill products—with an estimated market value of \$130 million—was achieved despite the hampering of rolling operations for several weeks by the mid-summer steel strike.

Capacity Climbing: Expansions scheduled for completion this year will—theoretically—boost U.S. titanium sponge capacity to as much as 36,000

tons/year. But there's considerable doubt among trade observers that all the capacity will be ready before '58—and still more doubt that all newly available capacity will immediately be put to full use.

In any case, here's how plans of the seven existing and potential producers are shaping up:

- Titanium Metals Corp. of America, with a 9,000 tons/year capacity in the offing, seems headed for top position on the sponge-producer list. The firm's first expansion upped an initial 3,600 tons/year capacity to 6,000; the current expansion—due onstream shortly after mid '57—will add another 3,000 to this.

- Electro-Metallurgical (division of Union Carbide and Carbon) recently ran its 7,000 tons/year plant at full capacity, presumably can continue to operate at that rate if the total output can be used.

- Cramet's plant has been in partial operation for some time, but the full 6,000 ton/year capacity reportedly will become operative only this month. There's doubt in the trade that much more than 50% of it will be used this year.

- Du Pont's 3,600 tons/year of sponge capacity is being doubled, will be ready, it's said, early in '58.

- Dow has capacity to turn out 1,800 tons of sponge annually; but because the firm's government contracts ran out last month (deliveries will be completed this quarter) the plant reportedly is shut down until other customers can be found on the open market.

And at least some titanium experts will be surprised if U.S. Industrial actually does complete its 5,000-tons/yr. sponge plant before the end of this

U. S. Titanium Sponge Output (short tons)

1948	3
1949	8
1950	50
1951	500
1952	1,075
1953	2,250
1954	5,370
1955	8,000
1956 est.	14,500
1957 est.	25-28,000

* CW's comprehensive report on titanium (Feb. 19, '55, p.34) pointed to an estimated 150,000 tons/year minimum production rate of sponge to meet requirements of military aircraft alone, and an eventual 1 million tons/year schedule to meet all needs.



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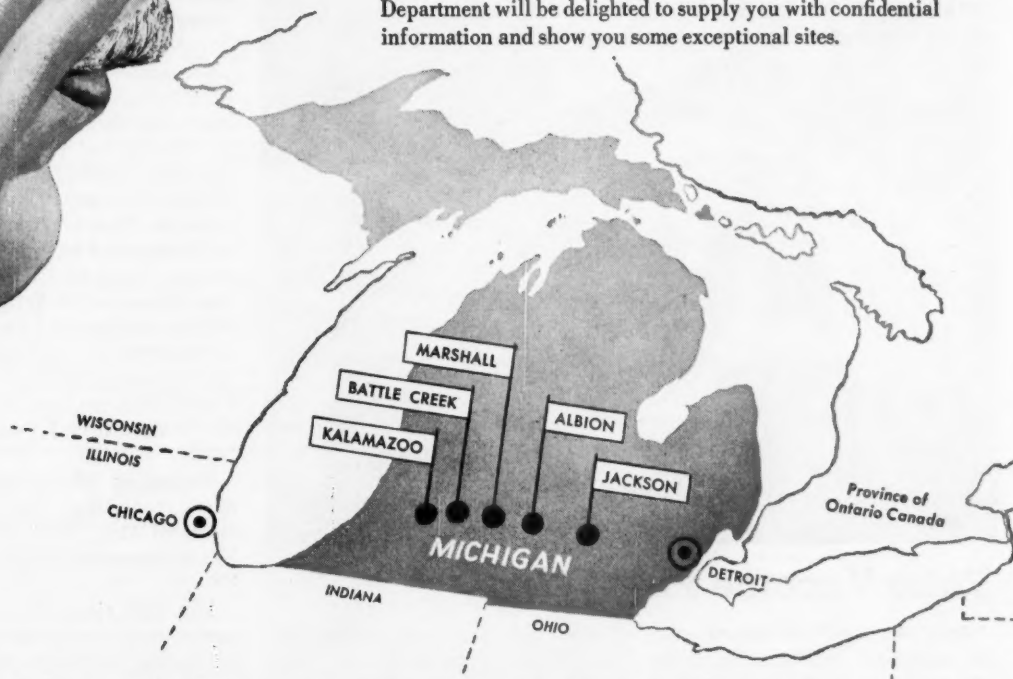
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MARKETS

year, as scheduled. Spokesmen for the firm, however, say the time-table still holds and U.S.I. will start up in the fourth quarter of '57, reach full-capacity production in the first quarter of '58.

Still another puzzler is the joint titanium venture by Kennecott and Allied Chemical. A \$40-million investment for a titanium-sponge plant—\$20 million to be supplied by each participant—has been planned. What this means in terms of ultimate plant capacity has trade observers guessing.

With no official figures forthcoming, financial circles have settled on a guesstimate of 6,000 tons/yr. But it's a figure not accepted by other experts who say this would be very expensive capacity, think 8,000 tons is more realistic. (Cramet's 6,000 tons of capacity, for example, cost \$28 million.)

Official comment from Allied is that the initial investment is no measure of

the size of the forthcoming plant—part of the funds will be used as working capital to set up the new company. Too, total investment is not necessarily limited to the initial \$40 million.

In any case, this plant will not figure into the titanium capacity picture in '57 because it will not be ready for start-up until late in '58.

Incidentally, three Japanese titanium sponge producers—two of them with plant capacities of 1,200 tons/yr.—will send their total output to the U.S.

What does all this spell out for '57? All "ifs" and "buts" considered, total U.S. titanium sponge capacity by the end of '57 should be somewhere between 28,000 and 36,000 tons—in either case enough to turn out the predicted 25-28,000 tons for titanium's biggest production surge.

(A lack of fabricating facilities in Japan accounts for the export of all sponge to the U. S.)

TVA Tells the Score

The U.S. fertilizer industry has undergone revolutionary changes in the last decade: annual fertilizer consumption has ballooned to more than 4.3 times what it was ten years ago, while the farmers' need for improved and less costly materials has forced the industry to move from simple dry mixing methods to relatively complex manufacturing processes.

The important role played by the Tennessee Valley Authority, in these developments, is detailed in TVA's just-released annual report for 1956.

During the fiscal year 1956, TVA's plants produced 257,700 tons of concentrated phosphate and nitrogen fertilizers. The total amount shipped to TVA educational programs was about 263,000 tons. But the use of these materials had relatively little competitive effect on private fertilizer producers. The materials—distributed through some 35 states—amounted to only 1.6% of the total fertilizer consumed in '55.

Ups and Downs: TVA's over-all experimental production of phosphate and nitrogen fertilizers declined considerably in '56.

Production of concentrated superphosphates—containing approximately 48% P_2O_5 —was less than half the output in '55—in line with the Authority's practice of making these production facilities available for the development of newer products.

In all, TVA produced 41,200 tons of concentrated superphosphate in '56, compared with 89,700 tons in '55, and 160,000 tons a few years ago.

This, incidentally, was TVA's first experimental fertilizer material (work on it began in 1934). Production has leaped from less than 90,000 tons in '38 to more than 1.5 million tons in '55.

Production of calcium metaphosphate (containing about 62% P_2O_5) increased 11%, from 65,800 tons in '55 to approximately 73,200 tons in '56.

The high plant-nutrient content of metaphosphate offers important potential savings in freight, handling, and distribution costs. Marketing and production research indicate that its manufacture would be feasible, particularly in the West where largest reserves of phosphates are found.

About 5,500 tons of diammonium



Polio Vaccine Piling Up

PUBLIC APATHY toward possible outbreaks of polio accounts for 25 million unused doses of Salk vaccine.

As '56 drew to a close, manufacturers had almost 22.9 million doses of unshipped vaccine in stock, and millions more remained

in the hands of doctors and distributors. Result: Pitman-Moore's production dropped some 30% from the mid-'56 peak, and the pile-up of stocks at Eli Lilly (above) has resulted in "substantial" cutbacks of the previous production rate of 8.1 million doses/month.

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.—America's largest producer of salt



How to Sample Rock Salt for Screen or Chemical Analysis

Sampling bulk rock salt accurately is often a difficult problem. For when salt is stored in piles, coarser particles collect at the foot of the pile—while finer particles remain inside and at the top. A few handfuls of salt taken at random from the outside and bottom of such a pile almost always mean an inaccurate sample for analysis. Also, during transportation and handling, salt particles of different sizes tend to become segregated.

However, by following a few simple steps, you can easily obtain salt particles of a truly representative size range. This sample will then give accurate results in any type of screen or chemical analysis. Here are the modern sampling techniques approved for most plants where salt is used:

Stockpile sampling of bulk salt. Samples from either indoor or outdoor stockpiles should be taken at three separate points: at the top of the pile, at the base, and at one intermediate point. The sample

taken at the intermediate point must come from deep within the pile. To prevent segregation of salt particles during this sampling procedure, a board should be pushed into the salt pile just above the point from which the sample is taken.



Sampling bulk salt in railroad cars or trucks. In sampling a boxcar load of salt, three trenches should first be made

in the salt across the width of the car. The

bottom of each trench should be at least 1 ft. below the surface of the salt, and approximately 1 ft. wide. Equal portions of salt can then be taken from nine equally spaced points along the bottom of each trench. Two of the nine points should be directly against the sides of the boxcar. Sampling in these trenches is best accomplished by pushing a shovel or sampling tube directly into the salt, and not by scraping horizontally.

The same general procedure may be used effectively to sample truckloads of rock salt.



Sampling between transport and storage. Rather than sample bulk salt in cars or in storage,

many companies feel that more accurate samples can be taken during unloading—at some point in the handling process where a flowing stream of salt is accessible on all sides. The points at which salt leaves a head pulley or drops from a chute lip are two of the most desirable places for this type of sampling.

This "running sample" gives consistently excellent results, but it must meet the following conditions as closely as possible:

1. To obtain salt particles of all sizes, the sampling scoop must move at uniform rate across the entire width of the stream. Samples will generally be inaccurate if the scoop moves through the stream from front to rear.
2. The sampling interval should be uniform. And it is better to take small samples frequently than a few large samples.
3. The sampling scoop should have a rela-

tively long rectangular opening, permitting a knife-like cut across the stream. The use of pails or shovels to sample the stream may produce an inaccurate sample.

4. Sampling should take place on a regular stream flow. When taken from an intermittent flow, samples may not be representative. Also, sampling should be carried on throughout the entire unloading period.

Moisture content. Samples should not be taken from bulk rock salt which has recently been exposed to rainfall or excessive humidity. Under these conditions, the proportion of insolubles will increase due to the leaching out of a certain amount of salt. Resulting analysis will then show a higher degree of impurities and a lower sodium chloride content than is normally present.

Finally, it must be remembered that no matter where the salt is sampled—the larger the sample taken, the more representative it will be for final analysis. In fact, many industries require a gross sample of at least 100 lb. from one carload of salt. This sample is then reduced to about 5 lb. for laboratory work.



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If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on salt sampling and analysis—just contact your nearest International sales office.

International Salt Co., Scranton, Pa.

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Sampling Tube Is the Simplest Method

Most sizes of rock salt can be sampled from stockpile, bins, trucks, or railroad cars by means of a simple sampling tube approximately 1 1/4" in diameter and about 6 ft. long. Five to eight insertions of this tube into the salt will furnish a sample of about 10 lb. Some of the best tubes for sampling rock salt are those sold for testing grain. They have about 12 openings and a special auger point.



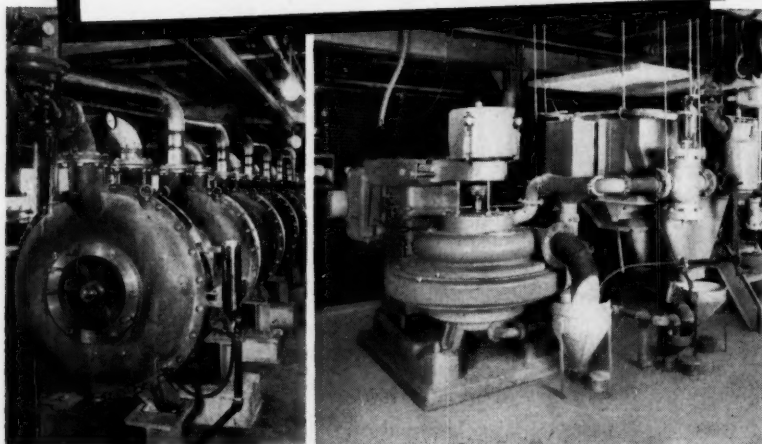
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NATIONAL STARCH PRODUCTS INC.
Indianapolis, Indiana**



Eight stainless steel Type C DorrClone housings at National Starch Products Inc. Each housing contains 480 ten mm. DorrClone units.

Close-up view of one of eight Merco Centrifuges installed at National Starch Products Inc.

In becoming the first commercial starch plant in the world to utilize the new Merco-DorrClone combination, National Starch Products Inc. has improved product quality and increased plant capacity. The addition of the new DorrClone Starch Washing System to the existing Merco Centrifuges has resulted in the production of a higher quality starch — containing less than 0.29% total protein — simultaneously with a concentrated 65-68% protein gluten product.

In the starch processing flowsheet at National Starch Products Inc., Dorr-Oliver equipment includes Merco Centrifuges which are used for mill starch thickening, primary separation, and gluten thickening ahead of the DorrClone Washing System; and five 6 in. FR DorrClone units, used for grit removal. The final cyclonic separation of starch from protein takes place in the new DorrClone System, which consists of eight stainless steel DorrClone housings each containing 480 ten mm. DorrClone units.

If you have a continuous processing problem where use of centrifugal force is indicated or if you're interested in the broad applications of DorrClones and Mercos, write Dorr-Oliver Incorporated, Barry Place, Stamford, Connecticut, U. S. A.



DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U. S. A.

MARKETS

phosphate were produced last year by TVA. (This is a new fertilizer containing a high concentration of plant nutrient—21% nitrogen and 53% phosphate.) Although the demonstration-scale plant was in operation only half the year, output was nearly double the 3,000 tons produced in '55.

Diammonium phosphate studies during the past year included conditioning with calcined dolomite to offset a tendency to cake in storage and investigation of the use of the phosphate in combination fertilizers. Stable materials containing 58-60% of the 3 major plant nutrients—phosphorus, nitrogen, potash—were successfully produced.

Phosphorus Score: TVA last year produced more than 26,400 tons of elemental phosphorus—important for both military and fertilizer uses. This was about 9% less than the '55 output; the drop was due chiefly to the decline in production of concentrated superphosphate. (However, the 4,100 tons used by the Army Chemical Corps' Phosphate Development Works and by defense arsenals was more than double the 1,700 tons provided in '55.)

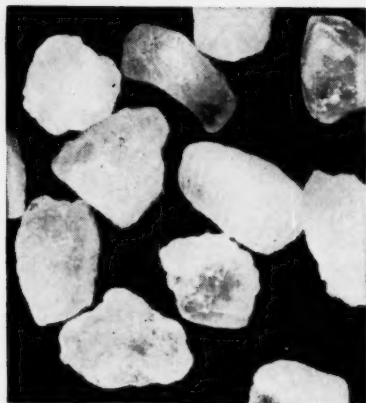
More than half the '56 elemental phosphorus output went into the making of calcium metaphosphate; the remainder was used to manufacture phosphoric acid for the concentrated superphosphate and diammonium phosphate processes, and for military purposes.

National phosphorus capacity has increased from 24,000 tons in 1934 to the present 352,000 tons/yr.

Output of ammonium nitrate by TVA was the lowest since 1951; a total of 137,700 tons was produced—28% less than in '55. Since World War II, private industry has expanded ammonium nitrate production to make it the nation's top nitrogen fertilizer.

U.S. farm consumption of ammonium nitrate, in '55, was 1,115,358 tons, compares with only 18,210 tons used in '43 when the conditioned material was first offered to farmers. Whereas TVA produced 70% of the total output in '43, it accounted for only 17% in '55.

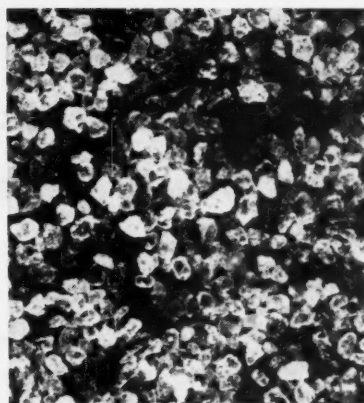
Although some may disagree, TVA cites its activities in '56 as re-emphasizing the Authority's operating principle: "research and engineer new fertilizers, educate farmers in their proper use, step out gradually and let private industry take over production."



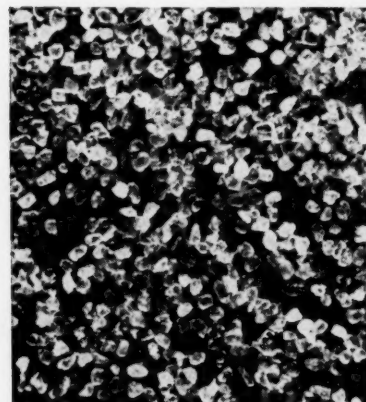
1. REPACKAGE these sparkling *Pea No. 1* crystals just as they come from the drum. Clean, dry, non-oily, they give maximum sales appeal to your product.



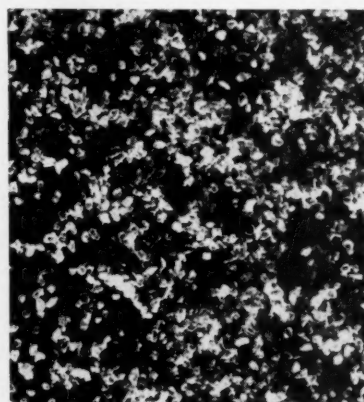
2. ADD VARIETY to your mothicide line with smaller, free-flowing *Pea No. 2* crystals. Repackage them as they are, or perfume them without melting.



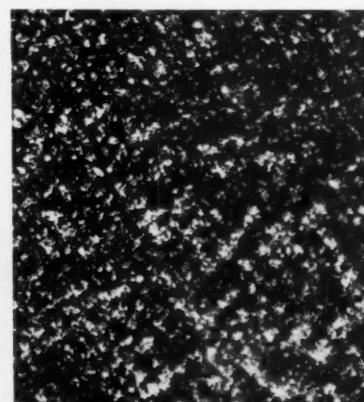
3. A POPULAR SIZE for sprinkling on clothes, *Rice No. 1* sublimates quickly to an extra-high concentration of pleasant-smelling, moth-killing fumes.



4. FEED POWER PRESSES with *Rice No. 2*. These crystals are just right for compressing into blocks or pellets. They flow freely; refill dies rapidly.



5. IN FOOT PRESSES, *Rice No. 3* works best. The crystals are free-flowing, small enough to pack and compress with little effort, for fast production.



6. MELT THIS SUPERFINE Powdered size for molding into blocks or pellets. It melts rapidly, saves production time. Easily colored or perfumed.

All photos actual size

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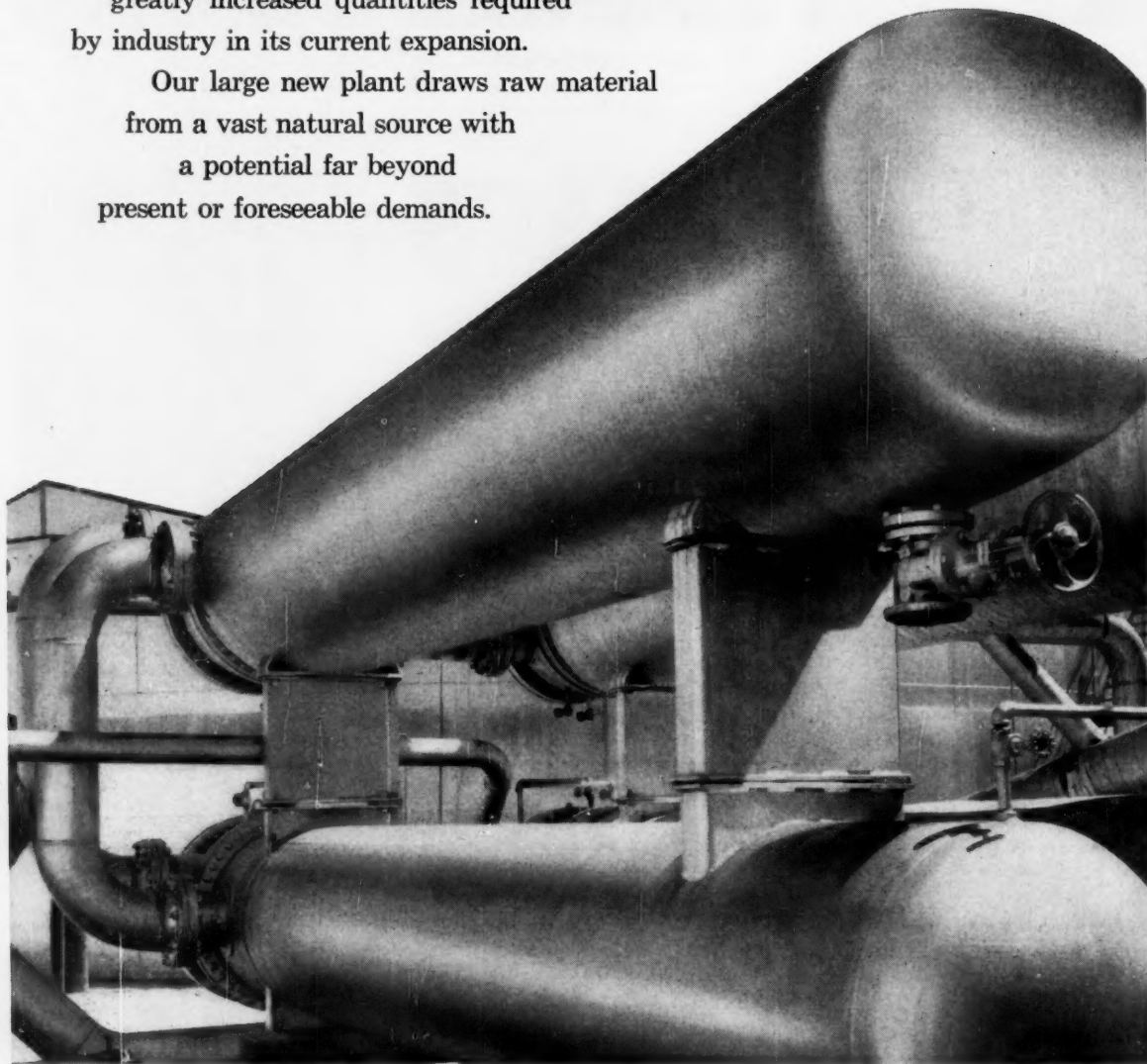
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Market Newsletter

CHEMICAL WEEK
January 19, 1957

It's still the season for market reviews and forecasts. And latest to stir interest among plastics and resin sellers—and in the home construction industry—is Henry Reichhold's. Reichhold Chemicals' president foresees as a reality "soon" homes constructed of plastic materials funneled from helicopters hovering over a building site. And driveways "sprayed on by slow-flying aircraft."

The new plastic homes, says Reichhold, are just one more development that will "expand the plastics and chemical industries 15-25% during the next year, triple the volume in the next five."

Reichhold also limns the ten-year growth of the synthetic-resins industry—from one billion lbs./year production in '46 to an estimate "exceeding 4 billion lbs." in '56. Outlook: by '60, consumption of such materials will grow to five and perhaps six billion lbs./year.

U.S. supply of commercial-grade selenium has apparently come half circle (in the past few months) from the critically short condition that has prevailed since the outbreak of the Korean War. Underscoring the change: last week's statement by B. F. Drakenfeld & Co., a New York reseller, that the material is again "available in normal quantities."

Hint of the easing was given last fall (*CW Market Newsletter*, Oct. 20, '56), and substantiated earlier this year when American Smelting & Refining cut high-purity selenium prices by \$3/lb., disclosed that it was re-entering large-scale production and sale of the commercial grade product.

Tip in the trade: there may be further selenium price cuts coming if demand continues to slip, as it is slipping, for example, from electronic-industry consumers who are making greater use of silicon and germanium in rectifier manufacture.

Tricresyl phosphate producers have knocked 2¢/lb. off prices of the widely used gasoline additive and plasticizer, establishing a new tank-car tag of 35¢/lb. The reductions are general and are, admittedly, beamed toward recapturing outlets in the plastics industry lost to the phthalates.

Meta-para-cresol prices, too, have dipped 10¢/gal. to set a tank-car level of \$1.10/gal. Used in production of tricresyl phosphate and in phenolic resins, the material is still moving along at a good clip, but demand isn't as acute as it was a few months ago.

Ethylene diamine users needn't worry about shortages. Carbide and Carbon Chemicals has just put into operation new facilities that double production capacity for the product at its Texas City installation.

Market Newsletter

(Continued)

Perhaps more significant to consumers, however, is the 4¢/lb. slash the company is posting; tank-car price is down to 40¢/lb.

Explains Carbide: "The new ethylene diamine facilities are designed to meet the growing use of this product for textile resins, fungicides, sequestering agents, and polyamide resins."

Last week Carbide also cut prices on its ethyl silicate 40, and ethyl silicate condensed, by 5¢/lb. Reason: "process improvements." The new quotes are effective immediately, set a 42¢/lb. price on the "40" material, 30½¢/lb. on the condensed, both in tank-car quantities.

Refined glycerine sales are still far from booming, but sellers are hoping that a substantial pick-up in demand early this year will whittle high inventories. Stocks are currently close to 68 million lbs. A few years ago that level would have been considered an excessive overhang on the market, but since much of the material today is stocked at various convenient shipping points throughout the country, producers aren't nibbling—yet.

There is some speculation, though, that unless glycerine demand picks up soon there may be a general price easing—and reports are the drop could be as much as 5¢/lb. A few tankcar-lot consumers are even now said to be picking up the polyol at a less-than-official quote.

Higher prices on benzene in the works? Since most major oil companies advanced crude oil tags last week, it's more than likely the petroleum-derived solvent will also be generally raised either this week or next. That's the consensus of a number of market observers.

One clearly discernible result of the speculation: spot buyers are hustling to lay in a good stock at current prices. Petro-benzene supplies are adequate, though, to forestall any market pinch. Sales of coke-oven material, of course, continue to barrel along at a good rate, as they have been for the past several months (*CW*, Dec. 1, '56, p. 100).

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 14, 1957

DOWN

	Change	New Price
Copper cyanide, tech., bbls., 20,000 ton lots or more	\$0.03	\$0.745
Ethyl silicate 40 tks. dlvd.	0.05	0.42
Ethylene diamine, 85-88 pcs, dms., c.l., dlvd., E. 100 pcs basis	0.04	0.42
1-Phenyl-3 carbethoxy pyrazolone-5, fib., dms., dlvd., E.	0.15	3.45
Sodium monoglutamate, dms., c.l.	0.05	1.15
Tricresyl phosphate, coaltar, dms., c.l., dlvd.	0.02	0.35

All prices per pound unless quantity is stated.



Escambia begins commercial production of PVC resins to bring the calendering, extrusion and molding industries a new standard for comparison. Compare Escambia's improved heat stability—it gives you advantages in quality control and processing that help prevent color drift and other problems experienced with less stable resins.

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ESCAMBIA PVC 1225—intermediate molecular weight, particularly adapted for supported and unsupported sheeting.

ESCAMBIA PVC 1200—lowest molecular weight in this series, designed for flexible and rigid sheeting.

Your inquiries on your company letterhead are invited.



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Carbon tetrachloride poisoning

Carbon tetrachloride has been injuring and killing people for many years, and CR has warned of the dangers in that way, and CR has been in Miami since 1922. That was at a time when there was little recognition of the dangers in home and factory use of this widely sold and used chemical. Recently, many cases of death and injury have come to public notice in which this popular cleaning and spotting agent has been involved. Thus an Associated Press dispatch of July 21, 1968, reports the death of a five-year-old boy overcome by a carbon tetrachloride cleaning fluid used in cleaning the upholstery in his father's car. A few days earlier, another Marge Jones, a few days earlier.

Carbon Tetrachloride a Hazard

The Engineer's Digest of the U. S. Coast Guard has issued a warning on the hazards of liquid used in carbon tetrachloride, which is the bought for the home and for use in fire extinguishers. The journal reports an interesting occurrence showing how serious is the harm that can be done by exposure to the fumes of this chlorinated hydrocarbon liquid that most people regard as a harmless liquid that can be used and handled with appreciable risk.

The Engineer's Digest notes the
should have been aware of the danger,
writer of the item also comments on
limit of carbon tetrachloride that
varies with the individual, and is
mined by the strength of the

Carbon Tetrachloride Poisoning

Tetrachloride Poisoning

An editorial in The Journal of the American Medical Association, January 3, 1953, reprinted by special permission of the Journal.

Attention has recently been directed to carbon tetrachloride as a source of potential poisoning in daily life. Carbon tetrachloride is used widely in industry and by the general public as a nonflammable dry-cleaning agent and as a fire extinguisher under many trade names; it is also used as a degreaser for many metals; as a solvent for crude rubber, tars, and resins; in the fumigation of insects; in the manufacture of a dry-hair shampoo, and in the fumigation of t and Salmonella; carbon tetrachloride is frequently un-

Carbon tetrachloride poisoning, anorexia usually reveals pulmonary edema, which occurs during lower nephron nephrosis, which occurs during victims die from liver disease or subacute yellow atrophy, while some die as the result of toxic potassium blood levels.

Because they presume numerous cases of carbon tetrachloride poisoning are unrecognized, Lyatt and Salmons propose that, in every case of jaundice, nephritis, or congestive heart failure which the patient has no previous history of

CARBON TETRACHLORIDE

...about one of the deadliest
yet least recognized poisons
in common use today

Condensed from M-G-7

Lawrence Leder

consequence of CR's in
to article is given as it
a would repeated con-
notations of terms use
V. and Robinson, L.
ch. Inst. Hyg. 4.

CONSUMERS' RE

JOE KRANICK worked two hours cleaning the soot from the hood of the kitchen range in his Long Island home one Saturday evening last winter. Then he ate supper and with a drank two bottles of beer. By nine o'clock he was complaining of an agonizing headache, followed by vomiting and nausea. By noon Sunday, Joe Kranick's whole body ached with fever. He could barely drag himself into the taxi which took him to the hospital.

The first diagnosis indicated that Kranick's liver had been badly assaulted, probably by virus hepatitis. However, diagnosis

Lawrence Leder

puzzle fell into place. The cleaning fluid that Joe had used on the kitchen stove was carbon tetrachloride. He had worked for two hours with his hand under the hood of the stove, breathing the fluid's vapors. The kitchen windows had been closed. To make matters worse, the action of the carbon tetrachloride on his system, Krawiec was lucky to be alive. For he had exposed himself, under the worst conditions, to one of the deadliest yet least recognized poisons in common use today.

Almost every family, ignorant of the danger, keeps some carbon-tetrachloride around, ranging from

Poison Gas Danger

POISON GAS

YOU MAY BE IN DANGER OF A kind of chemical warfare in your home, says a Miami, Fla. doctor.

The war is being fought, for example, can be produced by the action of heat on carbon tetrachloride, a common household liquid. Fire extinguishers containing this chemical are not to be used in fires, because the carbon tetrachloride they are so richly contained would be converted into a deadly gas.

Enough is sufficient circulating in a room from a small can of carbon tetrachloride to cause a fatal case of carbon monoxide poisoning, says Dr. AMA.

Carbon tetrachloride is a colorless, odorless liquid that reacts with heat to form a deadly gas.

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Carbon tetrachloride is a colorless, odorless liquid that reacts with heat to form a deadly gas.

the liquid creates a heavy concentration of vapor in the breathing zone with potential for irritation of the respiratory tract.

Carbon exposure to air containing one part of carbon tetrachloride vapor to 1,000 parts of air can cause chronic poisoning and damage to the liver and kidneys.

Fumes may accumulate dangerously when point-to-point removers are spread on large rooms.

"Do-it-yourself" activities are leading to more frequent use of various solvents in the home. The use, doctors at the meeting were told, should be recognized as a possibility but often unexpected source of this hazard.

The AMA's warning was pronounced in a statement by Dr. C. M. Fennema and Clark D. ...

Scare stories
are making public wary
of traditional cleaning fluid ingredient.

In October, readers of the 4.7 million-circulation *McCall's Magazine* found a story with this title: "Warning! Carbon Tetrachloride Can Cost You Your Life." Last month, another 11 million readers saw the same story condensed in *Reader's Digest*, this time under the heading: "Caution! Carbon Tetrachloride."

Naturally, makers of the closely related home-use dry cleaners and spot removers—most of which contain carbon tet—are worried, and are preparing for trouble.

- The two biggest selling spot removers—Energine and Carbona—are both suddenly on the brink of their first major formula changes in many decades. Seriously being considered: replacing carbon tet with a safer chlorinated solvent—probably methyl chloroform.

- Renuzit, the top-selling home dry cleaning fluid, which doesn't contain

any chlorinated solvent, has rushed a new package into use with a label clearly pointing out that fact.

At least two new spot removers which use methyl chloroform as the major solvent are trying to exploit the scare publicity:

• Metalglas Labs (Madison, Wis.) is promoting its Kitten as an all-purpose cleaner which can be used on windows, silver, porcelain, chrome, and the like, as well as on fabric.

- Tect, Inc. (Dumont, N.J.) is plugging the spot-removing utility of its Vythene, used since 1954 as a degreasing solvent, particularly for aluminum (*CW*, April 17, '54, p. 53).

Let It Go: The recent publicity wasn't touched off by a plague of new accidents, but rather by a change in attitude of carbon tet makers. They've given up trying to soft pedal the stories. Here's their logic: Although home-use products form an insignif-

icant part of carbon tet sales, they've been responsible for a great majority of the accidents. The best way to keep out of trouble, therefore, is to encourage spot remover producers to switch to safer (and more expensive) chlorinated solvents.

Small Business: Spot removers and dry cleaners for the home are not a giant industry. Cleaner sales, in the past 8 years, have been running at about \$12 million/year. During the same period, spot remover sales have climbed from \$3.7 million/year to something over \$6 million. It's not been a business characterized by big national advertisers, either. Much of the business has been done by small firms which buy carbon tet or naphtha from distributors and package it for local sales. Many such firms, like New York's Afta Solvents Corp., have replaced the carbon tet with a safer solvent (to get its name off the label). If

"You'll probably find this acid more economical than any other organic acid"

That's the way Jim Donald, Du Pont Polychemicals Department sales representative, describes Du Pont hydroxyacetic acid to his customers. This relatively strong acid is easier to handle than mineral acids and has many important applications.

Du Pont hydroxyacetic acid is useful in acid detergents for dairy equipment and is an effective ingredient of electropolishing and electroplating solutions. It's also used for the acid dyeing of wool and for dyeing and tanning of leather. For many uses, hydroxyacetic acid is probably the most economical of all the organic acids.

Think of Du Pont hydroxyacetic acid in terms of your own manufacturing requirements. Here is an acid miscible in all proportions with water and water-soluble organic solvents—including methanol, ethanol, acetic acid and acetone. It's shipped to you as a 70% solution in water.

Regardless of the quantity needed, you can count on Du Pont quality and prompt delivery. Want more information about Du Pont hydroxyacetic acid? Just mail the coupon.



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JIM DONALD earned a degree in Chemical Engineering at Stanford University and another in Business Administration at Harvard. Jim covers Southeastern Pennsylvania, Southern New Jersey, Delaware,

Maryland, Virginia and part of West Virginia for the Polychemicals Department. Like his fellow salesmen, he works closely with customers in determining their individual chemical requirements.

FOR ADDITIONAL INFORMATION ON SPECIFICATIONS, PROPERTIES AND USES, MAIL THIS COUPON

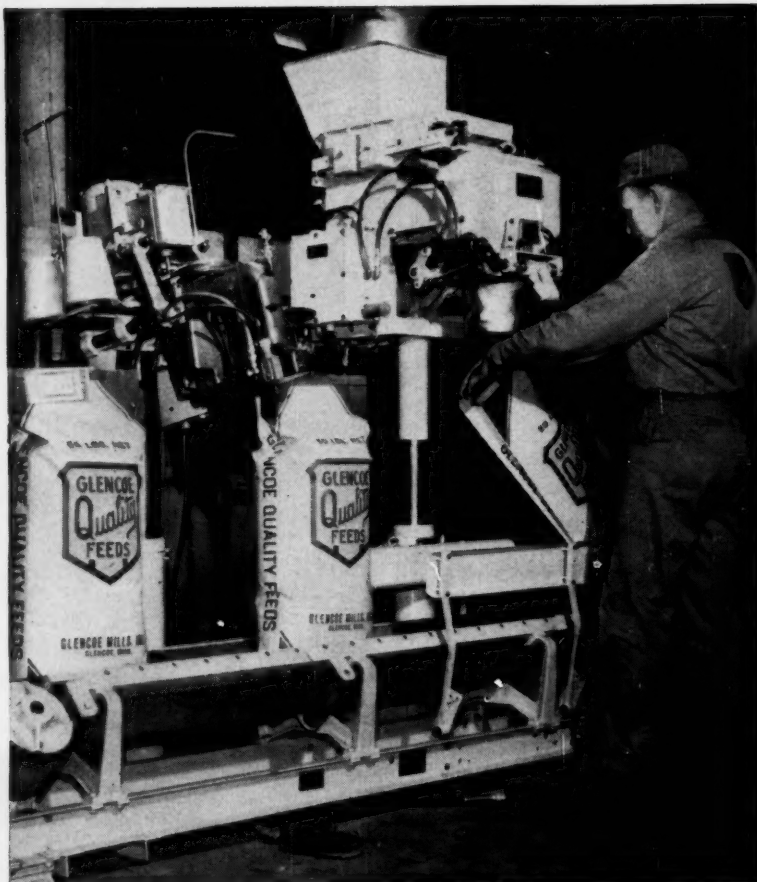
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- ☐ "HYTROL"® O
- ☐ CYCLOHEXANONE
- ☐ "LOROL"® FATTY ALCOHOLS
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OPERATING EASE—The operator places an

empty bag on the filling tube and starts the cycle by depressing the foot switch . . . that's all. The bag holder opens automatically when the filling cycle is complete. All controls are at eye level.

BEMIS VICON® FEEDER—A unique means of moving products from supply hopper to scale beam; a two-stage pulsating feeder tray first feeds rapidly, then at a rate which can be controlled for accuracy. When the exact weight is reached, the feeder cuts off and the filled bag is deposited automatically on the sewing machine conveyor.

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SPECIALTIES

the scare passes over, most such distributors will switch back to the cheaper carbon tet, regain their old profit margin.

There are only three brands of great prominence: Carbona, Energine, and Renuzit.

Energine Cleaning Fluid, a product of Cumer Co. Division of Sterling Drug Co., Inc. (Brattleboro), is the biggest-selling spot remover, and comes in two forms: flammable (with naphtha) and nonflammable (with carbon tet). The company reports that the flammable product, at 39¢ for 8 ounces, sells about 10% better than the carbon tet-containing material that retails at 49¢.

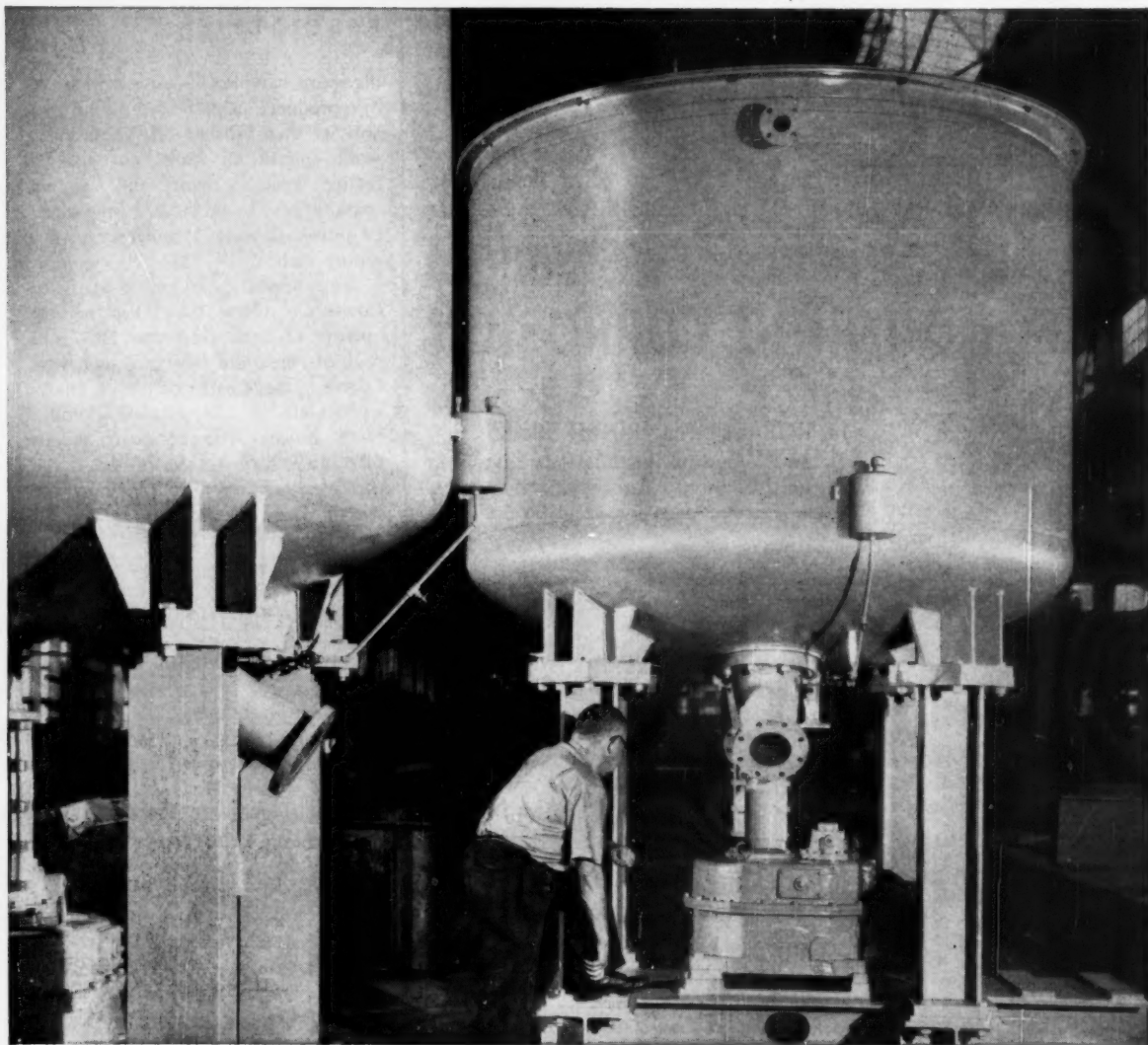
Second-selling Carbona Cleaning Fluid, a product of Carbona Products Co. (New York), has achieved success in spite of two potentially hazardous components. Since it is a combination of carbon tet and petroleum distillate, it is both toxic and flammable. But the hazard of each is reduced by being combined with the other.

A year ago Carbona purchased the rights to a brand of aerosol spot remover—Leopard Spot Remover. A low-toxicity, nonflammable combination of trichlorethylene, perchlorethylene and Freon, the product (at \$1 for a 5-oz. can) is not yet in wide distribution.

All or Nothing: Not strictly comparable with Carbona or Energine is the third big seller: Renuzit, product of Renuzit Home Products Co. (Philadelphia). This is not a spot remover, but a home dry cleaner in which clothes must be totally immersed. Renuzit, which also makes a spot remover containing a petroleum solvent and water, assumes that many purchasers of its dry cleaner also use it for spot removing.

Renuzit says it has about 85% of the home dry cleaner market. This would make it the largest volume cleaning fluid producer in the country. Although its sales have held steady for a number of years, they are down considerably from a war-time boom caused by limited capacity of short-handed professional dry cleaners.

Dryer Dry Cleaners: One of the principal objections to spot removers, aside from the hazard question, is the fact that they tend to leave a ring unless used very carefully. Capitalizing on this fault—and incidentally on



We took a new look at Dissolvers

The problem was to increase productivity per machine hour. The process in which the dissolvers were to be used involved a slowly soluble, dough-like material which had to be held at comparatively low temperature.

Working with the customer's process engineers, design requirements for increased production were developed. The equipment would have to be larger than any previously used, and also capable of utilizing more power efficiently. This was accomplished by designing an

1800 gallon dissolver with an impeller that had high shearing action. Relatively high power, used effectively, reduced the particle size, and production per machine was more than doubled.

The solution of this problem exercised Dravo's unusual talents in the design of special purpose and large scale equipment, and called for an engineering approach unhampered by production line restrictions. If your operation could profit by the use of high energy intensive dissolvers, or other equip-

ment designed to increase the speed and efficiency of process operations, call on Dravo. Write for Bulletin 236 for more information on Dravo Process Equipment. Address Dravo Corporation, Pittsburgh 25, Pa.

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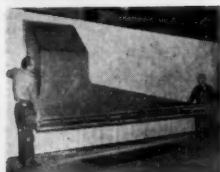
News

Wherever CORROSION RESISTANCE is a Factor **HAVEG...Industry's Standard For CONQUERING CORROSION**



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Large Haveg tank installations have been in continuous use for twenty-five years, under extreme corrosive conditions.



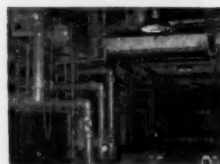
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Lightweight Haveg fume duct, hoods, stacks and fittings handle corrosive fumes and gases at temperatures up to 350° F.



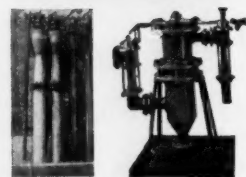
in CHEMICAL FLOORING

Haveg resin cements for brick and tile floorings, equipment linings, are ready for use within 24 hours.



in PROCESS PIPE AND FITTINGS

Haveg pipe and fittings, in several different plastic materials, may be flanged, threaded, cemented, or bell end-connected where required.



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SPECIALTIES

the scare campaign—are a variety of dry products, which absorb the spot and are then brushed off. These don't work against all spots, but are effective against many and, as an impulse item to be carried in pockets or purses in case of emergency, are selling well.

Janie Spot Cleaner, made by R. S. Cowen Co. (New York), has the best volume of such products. This is a stick of chalk-like substance (not, says Cowen, fuller's earth or french chalk) which sells at 25¢, 50¢ or a dollar (with brush). The company claims that Janie, now 4½ years old, is the biggest-selling spot remover in the Rexall Drug chain, figures that it ranks about third or fourth among spot removers of any type.

Trout Turnabout

Millions of trout at state and private hatcheries will soon be feeding on a diet rich in a product made from spent sulfite liquor—a product that fishermen have long urged be kept out of trout streams.

Scientists at the University of Wisconsin have been feeding trout on torula yeast feed supplements made from the papermaking by-product. They report that when the material is added to a diet, fish grow 20% faster than they otherwise do. Estimated annual savings to Wisconsin's own state fish hatcheries are \$10,000 to \$15,000 on feed cost alone when the material is substituted for the pharmaceutical-grade inactivated baker's yeast.

Top for Marble Tops

An aerosol-dispensed protective coat for marble, now selling in the Chicago area, will be available in department and furniture stores throughout the country by late February. Tri-Seal, a product of Preservation Corp. (Chicago), has been tested by marble companies for 4 years.

The wax-like spray is said to offer protection against water, ink, lipstick, coffee or alcoholic drinks spilled on marble table tops. In addition, when buffed, it produces a luster. Tri-Seal, however, will not remove old stains, protect marble against concentrated acid or put a gloss on a badly worn marble surface.

A 12-oz. can retails for \$2.95, a 6-oz. one, \$1.95.

1,4-BUTANEDIOL

the plus-value Glycol

$$\text{HOCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$$

1,4-Butanediol adds properties unobtainable with the shorter-length glycols to:

Plasticizers

- + excellent resistance to migration
- + outstanding ease of incorporation
- + good low temperature properties

Polyurethanes & Polyesters

- + high tensile strength and hardness
- + low water absorption

PLASTICIZERS

Simple ester type: The esters of 1,4-Butanediol and suitable acids are effective plasticizers for thermoplastic polymers, particularly rubber, GR-S rubber, neoprene and nitrocellulose adhesives.

Polymeric type: Polyesters obtained by the reaction of 1,4-Butanediol with dibasic acids are outstanding plasticizers for vinyl polymers, particularly vinyl chloride and vinyl chloride copolymers.

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Polyesters of 1,4-Butanediol reacted with diisocyanates are of value in polyurethane foams, elastomers and surface coatings.

1,4-Butanediol reacted with diisocyanates gives polyurethanes possessing properties of value for synthetic fibers and bristles such as increased tensile strength and hardness.

POLYESTERS

1,4-Butanediol has given resins with improved flexibility and decreased water sensitivity. Fibers, finishes and lacquer raw materials of superior physical properties are obtained.

OTHER USES

Now being used as a solvent in ink formulations... is a chemical intermediate for solvents, pharmaceuticals and textile auxiliaries.

PROPERTIES

Colorless, odorless liquid, f.p. range 18–19.5°C, b.p. range 221–231°C. Not a skin sensitizer or irritant. Infinite solubility in water, alcohol and acetone.

1,4-BUTANEDIOL IS AVAILABLE IN DRUMS AND TANK CAR QUANTITIES.

For technical information, price schedule and samples write to:

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ACETYLENE CHEMICALS DEPARTMENT

ANTARA CHEMICALS

A SALES DIVISION OF

GENERAL ANILINE & FILM CORPORATION

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From Research to Reality



ADELL'S MILLER AND BAROWSKY: The blueprint took 20 years to draw.

Pace-Setting Syndet Maker Tackles a Happy Problem

There's one drawback to sudden success: it can throw planning all off. That's the case at Holyoke, Mass., where Adell Chemical Co. is building a handsome new plant to manufacture its liquid synthetic detergent, Lestoil.

Even before the bricklayers had completed the new structure's walls last week, Adell was aware that the demand for Lestoil exceeds the plant's initial design capacity, even though this capacity is 5-6 times that of present facilities.

There are certainly worse problems than unexpected success—Lestoil probably now has the second-largest sales of all types of synthetic detergents sold in New England. But Adell hasn't been confused by its new triumph. It's adding up the factors that made for its good fortune and is figuring on using them to prolong the boom.

TV Success: Russian-born Jack Barowsky formed Adell Chemical in 1933 specifically to produce Lestoil; the firm has been virtually a one-product house ever since.

Perhaps the one most striking contribution to Lestoil's success came about three years ago. Adell had tried radio and TV spot commercials in a limited area. But, says Ad Manager Eleanor Miller, it wasn't until Feb. '54, while giving TV one more whirl, that Adell hit upon the one-minute, demonstration-type commercial that really sold the product.

Adell used its new commercial very frequently. Too, it used spots in a somewhat uncommon fashion—it would begin advertising in an area long before stores had even been approached on the product. Then, when demand seemed to be built up, it would offer Lestoil in quantity to virtually every retailer at once. But there are other factors in Lestoil's New England success:

- It is packaged in a low-cost glass bottle.
- It's strictly "fair traded."
- It's sold directly to stores.

It would be unfair, of course, to overlook the degree to which the public has lately been conditioned on

the general subject of syndets, and more particularly, to the use of light-duty liquids for dishwashing.

Looking for the House Key: Though it's only in the past year or so that Lestoil has become a major household product, it has been a profitable item almost from the start. It was first sold industrially to laundries and dry cleaning establishments.

Lestoil—loosely described as a combination of anionic and nonionic surface-active agents plus chelating agents, lubricants and solvents—is used for jobs outside the generally accepted bailiwick of syndets: de-inking newsprint, the manufacture of both rag and wood-pulp paper.

But Barowsky has always felt that Lestoil has a place in the home, and even in the '30s, he tried a few consumer outlets. It was not until about a dozen years ago, however, that consumer test-marketing was begun in earnest. "Until about two years ago," says Barowsky, "we lost money every year trying to sell to the householder."

Unlocking the Door: Once he had hit on the proper way to retail Lestoil (invade a limited area, saturate it, and keep up the barrage of ads), he went at it vigorously. From a 238th position nationally in *Advertising Age* magazine's survey of radio and TV spot users, Adell climbed to 174th in 1955, and up to No. 70 in 1956.

Philadelphia is the area most recently invaded by Adell; it was given the spot-commercial treatment for a few weeks, then the product was brought in, and by the end of December most major groceries were stocking Lestoil.

Lestoil still has little competition in most areas from the heavy-duty liquids made by the major soapers. Barowsky feels, too, that his product is not strictly comparable to them—but admits that they will undoubtedly be his greatest eventual competition.

The East Coast is the current target of Adell's expansion program. As a small, family-run firm—Barowsky and his two sons-in-law meet Saturday mornings to decide policy—Adell does not seek to go national immediately. It won't, however, rule out any area to which it feels it can give full attention. As much as anything else, the firm's policy of keeping close tabs on every phase of its operation and growth gives it assurance that it can take its new success in stride.



Now "Dutch Boy" Stabilizer research
is helping the electrical industry
**rewire yesterday's conduits
for tomorrow's loads**

Today, the electrical industry is stressing adequate wiring.

In existing structures, that means re-wiring. A gigantic task! But the electrical industry has developed a way to make it easier . . . vinyl insulations with stepped-up efficiency.

**"Dutch Boy" Stabilizer research
boosts quality of vinyl stocks**

In producing vinyl insulations, processors face several problems of quality that "Dutch Boy" Stabilizer research helps solve.

"Dutch Boy" Dythal®, for example, overcomes high service temperatures. "Dutch Boy" Dyphos® stabilizes against light and weather. For standard insulation stocks, the "Dutch Boy" Tribase Stabilizers are preferred.

And just recently, came "Dutch Boy" Stabilizer Lectro "60,"® unique for water

repellency, economy, and over-all efficiency.

Helping other industries, too

"Dutch Boy" Stabilizer research is also stepping up quality in vinyl flooring, organosols, plastisols, profile extrusions, film and sheeting.

At the same time, "Dutch Boy" research in thixotropic gelling agents (BENTONE®s and BEN-A-GEL®) is helping the paint, oil, ink, and other industries improve body and flow characteristics of their products.

Mail the coupon for details on the "Dutch Boy" Chemicals mentioned above. For technical assistance in their application, write.

NATIONAL LEAD COMPANY

111 Broadway, New York 6, N. Y.

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KC-8495

Gentlemen: Please send literature checked below:

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☐ for vinyl electrical insulation stocks ☐ for other vinyl stocks (specify)

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powder: for conventional mix and filter systems. A type for every need.

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SPECIALTIES



GEIGY'S PRELUDIN: For well-known amphetamine weight reducers, a . . .

Heavyweight Challenger

The forty million Americans who comprise the nation's overweight population may soon throw their weight behind a new ethical pharmaceutical that's currently going into country-wide distribution. The new prescription-label drug, an anorexigenic—i.e., appetite suppressant—is a product of Geigy Pharmaceuticals. Its trade-name: Preludin.

Preludin (2-phenyl-3-methyltetrahydro-1,4-oxazine hydrochloride) was fortuitously singled out in Germany a few years ago for development as a specific weight-loss drug. During a concentrated screening program for antidepressive stimulants, the drug's qualities were noted. While it proved a poor nervous-system stimulant, the relaxed rodents to which it had been administered were seen to have lost their appetites. It's this anorexigenic characteristic of the drug that Geigy is now exploiting.

Besides the fact—demonstrated in the earlier screening—that Preludin provides only a mild central nervous system stimulation, Geigy also stresses these points about it:

- It's nonhabit-forming.
- It exhibits the phenomenon of tachyphylaxis—repeated doses evoke progressively less effect on the cardiovascular system. In short: it doesn't affect blood pressure.
- It has shown no effect on a person's blood sugar level or glucose tolerance curve.

- It manifests "a strikingly low incidence of side reactions."

- It can be taken in the evening to prevent the serious and common problem of night-time nibbling, without disturbing sleep.

Reported by some investigators: the drug occasionally causes dryness or an unpleasant taste in the mouth.

In marketing the new ethical* to physicians, Geigy has come up with the eye-catching idea of having the sample tablets dispensed from a simulated tape measure. The tape measure theme is used in all promotion of the material.

With the current stress on svelteness (which almost makes it seem un-American to be overweight), Geigy won't have to stimulate a demand for the product. Its big problem will be to overcome the disenchantment experienced by some who have tried numerous over-the-counter preparations without success.

Recommended dosage (subject, of course, to the physician's discretion) is one tablet before any meal at which patient tends to overeat significantly, one half tablet for those meals at which the patient has only a slight tendency to overindulge. Cost of the drug (to druggists): \$7.50 for a 100-tablet bottle.

* Only anorexigents now sold ethically in volume are the amphetamines (Dexedrine, Benzedrine, etc.) which have been commercially available since the '30s. Such other appetite-depressant items as mechanical bulk producers, milk powder tablets, etc., are over-the-counter items.



your **DETERGENTS SCRUB** better



your **ALCOHOLS RUB** better
when formulated with Enjay Lower Alcohols

Ethyl Alcohol for detergents or Isopropyl Alcohol for rubbing—order from the Enjay Company, one of the world's foremost suppliers of alcohols. You are assured of a dependable supply of uniform, high quality products.

In addition, the Enjay Laboratories are at your service to assist you in the use and application of all products from Enjay's diversified line of petrochemicals.

Write or call for complete information.

Enjay offers a diversified line of petrochemicals for industry. LOWER ALCOHOLS (Isopropyl Alcohol, Ethyl Alcohol, Secondary Butyl Alcohol); HIGHER OXO ALCOHOLS (Isooctyl, Decyl, Tridecyl Alcohol); and a varied line of OLEFINS AND DIOLEFINS, AROMATICS, KETONES AND SOLVENTS.



*Pioneer in
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January 19, 1957 • Chemical Week

ORGANIC PEROXIDES

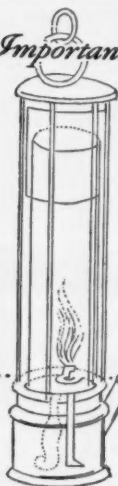
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LINE OF
ORGANIC
PEROXIDES
IN THE INDUSTRY



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1816

In mining...

Sir Humphrey Davy
invented the miner's
safety lamp, greatly
lessening hazard. Fewer
mine disasters meant
more coal for Britain's
infant industries.

In the history of fats and waxes

GROCO 55 - TRIPLE PRESSED STEARIC ACID

Titre	54.5° - 55.2°C.
Titre	130.1° - 131.4°F.
Color 5 1/4" Lovibond Red..	0.5 max.
Color 5 1/4" Lovibond Yellow	1.5 max.
Unsaponifiable	0.05% max.
Saponification Value	208 - 212
Acid Value	207 - 211
Iodine Value (WIJS)	4.0 max.

Chevreul prepared stearic acid in 1816. In 1837, A. Gross & Company entered the infant fatty acid field and has since pioneered in the improvement of refining techniques for these materials. Specifications for GROCO 55 - TRIPLE PRESSED STEARIC ACID show at a glance the high purity and stability characteristics which have been built into the best stearic acids of today. Send for samples and catalog "Fatty Acids in Modern Industry."

A. GROSS & COMPANY

295 Madison Avenue, New York 17, N. Y.

Factory: Newark, N. J.

Manufacturers Since 1837

Distributors in Principal Cities

SPECIALTIES

No Wash Out

A new grease being marketed by Pennsylvania Refining Co. (Cleveland) is intended for use on solvent-handling equipment. It's claimed to be impervious to the washing action of almost all petroleum and chlorinated solvents. Naphtha, kerosene, gasoline, liquefied petroleum gas, fuel oils, coal-tar solvents, trichlorethylene and perchlorethylene, in particular, are said to have virtually no effect on the product.

Pennsylvania Refining describes the product simply as a "synthetic composition." Consistency of the material remains relatively unchanged in use, and viscosity is low at extremely low temperatures, says the company.

Price is steep: \$4.15/lb. in 100-lb. quantities.

Softeners' Spurt?

The real start to successful marketing of fabric-softening agents may have been keyed by Hotpoint Co. (Chicago) in introducing its '57 model automatic washer last week.

The washer's feature played up in the ads: a chemical fabric-softening system that Hotpoint terms "an entirely new automatic home laundry conditioning process."

The "process" is a final rinse cycle during which a chemical is automatically injected into the washer to condition the rinse water, soften the fabric and "rinse newness" into the clothes.

The material responsible for all this is a liquid product called Rinse Rite, made and trademarked by Economics Labs of St. Paul, maker of such cleaning materials as Soilax and Thanx, as well as the fabric softeners, Diasof and Sof'n.

The company won't pin down the exact Rinse Rite formulation, but says it contains a non-ionic wetting agent that disperses soil, and another agent (probably CMC) that suspends soil. The third ingredient is a fabric softener, a type of product the company has had on the market for some time (*CW*, July 30, '55, p. 61). Two ounces of Rinse-Rite are injected during the final rinse in each washing cycle. The machine's reservoir holds 16 oz. of conditioner.

Housewives will obtain the rinse conditioner from Hotpoint dealers for 89 cents (or thereabouts) per 24-oz. bottle.

NEW NON-IONIC SURFACTANT

Makon 10 is a nonyl phenoxy polyoxyethylene ethanol offering excellent detergency, foaming, dispersing, emulsifying and solubilizing action. It will not hydrolyze in aqueous solutions of alkalis or acids. It can be used with anionic, cationic or other non-ionic agents. Makon 10 is effective in hard or soft water, as it does not form salts with metallic ions and is also unaffected by oxidizing or reducing agents.



STEPAN

makon 10

SPECIFICATIONS

Physical State:	Clear viscous liquid
Color:	Pale yellow to colorless
Cloud Point of 1% Solution in Water:	52°—56°C
pH (1% solution):	Neutral
Solidification Point (°C):	4°
Flash Point (°C):	290°
Fire Point (°C):	330°
Density:	8.85 lbs. per gallon
Specific Gravity (25°C):	1.06

Send Coupon for Further Information and Sample



STEPAN
CHEMICAL COMPANY

20 North Wacker Drive • Chicago 6, Illinois
Telephone: CEntral 6-5511

*America's Most Complete Line of Surfactants—Make
Stepan your "SHQ" (surfactant headquarters)*

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Stepan Chemical Company
20 N. Wacker Drive, Chicago 6, Illinois

Gentlemen: Please send me

- ☐ Sample of Makon 10
☐ Technical Bulletin on Makon 10

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Excellent position available for chemist or chemical engineer with business acumen, initiative, and imagination. Ten years' experience in the chemical industry (including five years in Market Research or Market Development) are a prerequisite for the man whose duties will include contact at the management level or outside the Company. Responsible for all phases of market investigations—sales analyses, market surveys, financial and economic studies plus the ability to make sound recommendations for Company action.

Please send resume to
Placement Supervisor
MERCK & CO., Inc.
Chemical Division
Rahway, N. J.

PUBLICITY WRITER

Excellent future for man to organize and run continuous public relations program on plastic and resin materials for leading chemical company. Seeking man between 28-38 years of age with good press relations contacts, who preferably has engineering educational background with at least 5 years press relations, publishing or copywriting experience. Submit resume stating experience and salary desired. Replies held confidential.

Personnel Department
BARRETT DIVISION
Allied Chemical & Dye Corp.
40 Rector St.—New York, NY

CHEMIST WANTED

Development and formulation work

Some experience synthetic detergents and cleaning specialties. Excellent working conditions. Fine country location Connecticut shoreline, one hour from N. Y. Opportunity for independent creative work. Negotiations in strictest confidence. Write fully under personal cover to C. L. WEIRICH, C. B. Dolge Company, Westport, Conn.

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Wanted: Chemist or Chemical Engineer with 1-3 years experience in insulation board, pulp and paper, or related industry for assistant to Quality Control Supervisor in large insulation board plant located in South on Gulf Coast. Will consider recent graduate without experience if potential is promising. Write P. O. Box 1528, Mobile, Alabama for application and personal interview appointment.

Consultant Emulsion Polymerization. Applicant must have recent and positive industry experience in the formulating or plant production of either poly vinyl acetate or poly acrylic emulsions. Desired by company who now manufactures polymer emulsions. P-3910, Chemical Week.

Positions Wanted

Plasticizers Product Manager fitted by previous experience to assume complete responsibility for development and production. PW-3973, Chemical Week.

Production Manager Graduate chemical engineer, experienced in manufacture of chemical specialties for textile industry, i.e., stiffeners, detergents, finishes; products for metal working industries and steel mills. Familiar at plant management level for 20 years with all phases medium-sized chemical plant operation. PW-3958, Chemical Week.

Salesman: B.S. degree in Agriculture. Five years successful industrial and agricultural chemical sales experience. Age 31, married, veteran. Desire responsible position with limited travel. Locality secondary to opportunity, but would prefer Los Angeles area. PW-3996, Chemical Week.

Sales & Marketing Executive. Mature, seasoned and aggressive executive—39—capable of handling sales and marketing management in all its facets on a broad industrial, agricultural and consumer chemical specialties scale in national markets—seeks a responsible position. Available on 30—60 day termination notice. Has a wealth of product marketing & development experience with top name companies in chemical and allied industries; plus a record of achievement. Handled sales in 7-8 figure volume. He can sell, he can direct, he has vision and integrity. If you have a position open; if you are contemplating a staff addition;—you ought to look at this applicant. Salary requirements range \$15,000. PW-3986, Chemical Week.

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Please send complete resume to:
RICHARD KITHIL, VICE PRESIDENT
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We are looking for sales trainees to sell advertising space for CHEMICAL ENGINEERING or CHEMICAL WEEK. No selling experience necessary. Age requirement 21-30 years. Opportunities unlimited. Send complete résumé or phone for appointment. Contact Steven J. Shaw, Advertising Sales Manager, CHEMICAL ENGINEERING • CHEMICAL WEEK, McGraw-Hill Publishing Co., 330 W. 42nd St., New York 36, N. Y. Phone: LOngacre 4-3000. Ext. 693.

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Opening for chemist or chemical engineer with marketing research or commercial analysis experience. Position is in newly formed marketing research section of a leading national company rapidly expanding in the petrochemical field. Excellent opportunity for future advancement in development, sales, operation, and administrative fields, as well as in marketing research. Location, Houston, Texas. Salary, open, depending upon qualifications. Please send personal resume to

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Will a research-minded company of 1,000 employees satisfy your professional needs? Expanding progressive organization has a number of positions open for polymer chemists with sound theoretical background and interest in a variety of application fields, including adhesives, plastics, elastomers and coatings. Products will be utilized in the textile, rubber and aircraft industries. Individuals will be allowed to pursue research efforts from theoretical level through product development stage. Dept. SP, Box 369, Erie, Pa.

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NEW SINGLE STORY SPRINKLERED BUILDING
3055 SQUARE FEET OF UNOBSTRUCTED FLOOR SPACE

15 FOOT CEILING WITH DISTILLATION TOWER AND 8 UNDERGROUND HERESITE COATED TANKS—TWO 1500 GALLON CAPACITY, SIX 550 GALLON CAPACITY. CONSTRUCTED FOR HAZARDOUS INDUSTRIAL TENANCY IN UNRESTRICTED AREA. LIGHT, POWDER, PROCESS STEAM AND WATER CONNECTIONS AVAILABLE. ADJACENT RAILROAD SIDING. EXCELLENT LOCATION FOR PILOT OR SMALL CHEMICAL PLANT OPERATION.

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CH, N, S, Halogen, Fluorine, Oxygen, Alkoxyl,
Alkamide, Acetyl, Terminal Methyl, etc. by
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80% Technical

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295 Madison Avenue,
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Chemicals—By-Products—Plasticizers
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CHEMSOL, INC.

70 Dod Street, Elizabeth, N.J. EL 4-7654

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CHEMICALS—OILS—SOLVENTS
DRUGS—RESINS—WAXES
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BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

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CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 3, N. Y.
HANOVER 2-6970

LABORATORY

FOR SALE

254 W 31, NEW YORK CITY
50 FT. BENCH SPACE, ALL UTILITIES, HOODS,
PARTITIONED OFFICE AND STORAGE SPACE
1100 SQUARE FEET
LA 4-4126

For Sale

Bird Stainless Steel Continuous Centrifugals
40" x 60", 32" x 50". Excellent Condition. Perry
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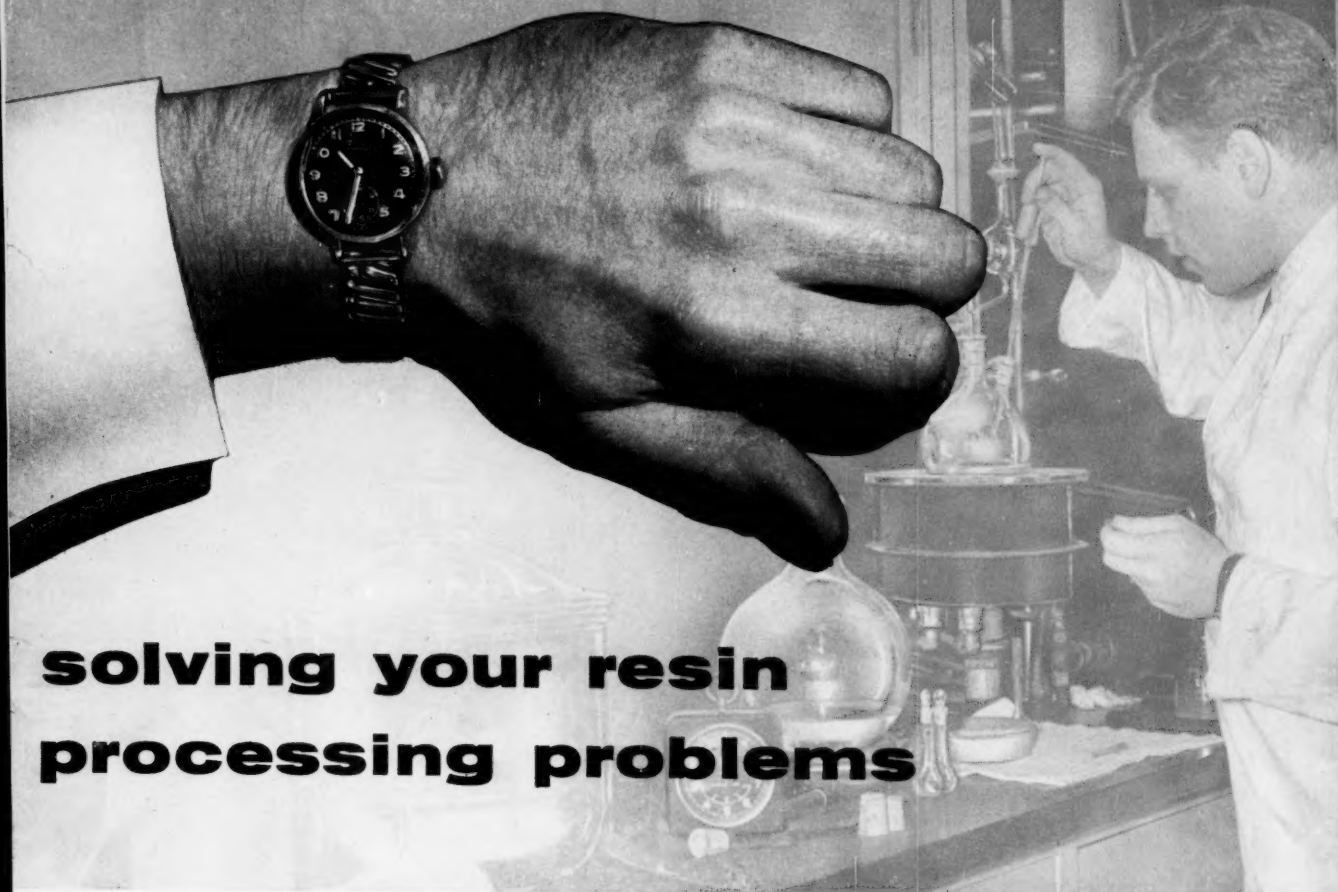
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